Technical Scrapbook, Cat. 1148

This scrapbook covers the period January-December 1882. The entries are by Edison and relate primarily to electric lighting. Included are notes and drawings concerning lamps, generators, meters, regulators, electric power distribution, and other parts of the system. There is also some material pertaining to electric railways and to mining lamps. Many of the entries contain notes by Edison to Richard N. Dyer, his patent attorney, and to Samuel D. Mott, his patent draftsman. The case number of Edison's patent application has been written on some of the items. Some of the notes and drawings at the beginning of the book were dated by Edison's patent attorney, Henry W. Seeley. These documents bear dates of October or November 1882, the date that Seeley received them from Edison.

Case V-31

Patent

New process for obtaining Electrical suitable for large industrial operations =

I form electrodes by moulding an oxide of lead around a lead core and Reduce the oxide of lead by a reducing agent & heat, to the metallic state, to form ~~the~~ one of the Electrodes, The other Electrode is subjected to a chemical process whereby the Oxide of lead is oxidised to the higher oxide, When current is required the two different Electrodes are ~~[illegible]~~ placed in a cell containing H_2O4 acidulated with SO_4 & after ~~the~~ great portion of the peroxide of lead is has been reduced to Red lead & the metallic lead of the other plate oxidized. The plates are taken from the cell & the one which is oxidized is dried & reduced to metallic lead again by heat & a reducing agent while the other is again peroxidized —

The peroxidation of one of the Electrodes is obtained by acting on it with Chlorine in an acidulated Solution, the lower oxide being raised by the action of the Chlorine to peroxide of lead

N.Y. Dec. 4, '82
W.W. Seely.

Peroxide made in this way is not [illegible]
[illegible]

Patent,

Improvements in plante Accumulators

I ~~prepare~~ make the plate by moulding
an oxide of Lead preferably Litharge
~~around~~ which is to be mixed with
water or gum water around a
Sheet of Lead having a roughened
surface having projections & containing many perforations.
the whole is made solid by great
pressure in a powerful press,
the plate or plates are then
placed in a chamber or
tube and a reducing gas
such as Hydrogen coal gas or other reducing agent passed through
the chamber; heat is Externally
applied and the whole of the
oxide is reduced to metallic
Lead which being very porous

and integral, gives a greater capacity of storage & economy per lb of Lead than ~~[illegible]~~. Care should be taken ~~that~~ the temperature should not be allowed to reach a point where the lead becomes liquid but just sufficient to produce perfect reduction to the metallic state. If greater porosity is required ~~an~~ light Earthy oxide may be mixed & moulded with the oxide of Lead the lead being reduced the Earthy oxide dissolved out as a soluble salt by acid =

New York Dec. 4, '82

H W Seely

A Battery made in this manner
should not be charged to a
point where the whole of
the Lead of the plate
is converted Electrically
into the oxide - the central
webb of lead is not always essential but
it is more practical - breaking
Claim, the formation of Electrodes
for Secondary Batteries Consisting
in moulding (by pressure or otherwise) ~~an~~ Salt of Lead
~~salts~~ the form desired &
then Chemically reducing
the Lead to the metallic
state for purp - etc -
Central webb to make good Contact,
Integral Etc Etc

[illegible]

Patent ... Case 529

Improvement Consists in providing
a coating to the filaments of
Carbon which is with difficulty
oxidizable & which is a conductor
Electrical Carrying >

I accomplish this by first
Exhausting the globe containing
the filament of Carbon & then
cause a ~~volatile~~ Salt of Silicon
to pass into the globe such as
Chloride of Silicon, the
filament is being brought to
incandescence by the Electric
Current when the decomposition
of the gaseous Chloride of Silicon
~~takes~~ place the Silicon is deposited
upon the Carbon giving it a

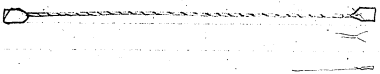
Surface like Silver

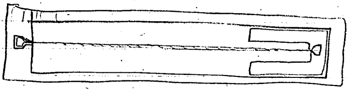
Claim
Coating a filament of Carbon with Metallic Silicon in the manner & for the pur

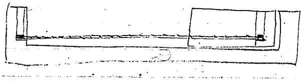
N.Y. Dec. 4, '82
H.W. Seely

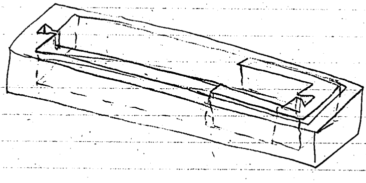
Dense, reflects light brilliantly. Dont oxidize except with extreme difficulty. Resist; electrical carrying better than carbon. Vacuum poor or inert gas not wholly inert, filament oxidizes.

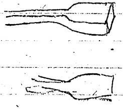
add to twisted fiber case. Mould for take contraction.









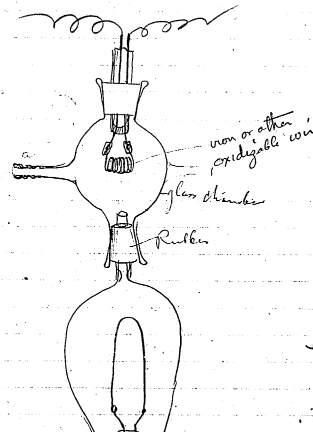


Nov. 23 '82

exhaust with hand pump at a. Then heat wire, which absorbs O ~~by~~ by oxidation leaving N at pressure needed.

Cyanogen introduced by separate tube ^after exhaustion. Carbon instead of iron. Cyanogen decomposed and ^carbon deposited, + nitrogen left.

If carbon used with air carbonic oxide would be formed. n.g.


a
iron or other oxidizable wire
glass chamber
Rubber

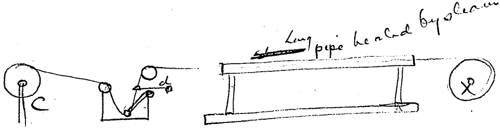
~~Originally filled with chlorine or bromine, which~~

N.Y. Nov. 20, 82
H. W. Seely.

I take cotton covered wire
and pass it through a
bath of baking Japan
varnish & afterwards bake
the same by heat, for several
hours afterwards the
same operation is twice
or more times repeated
until the surface of the
wire is smooth & highly
reflective of light.
If very heavy insulation
is required I coat the
wire with ~~paper~~ cotton paper parchment asbestos
or other fibrous material

pass the covered wire through
the bath of Japan varnish
afterward baking the
same, ~~this~~ & repeat this
operation until the glossy
surface appears I then
cover this with paper cotton
or other material &
repeat the operation of
varnishing & baking
Thus I am enabled to
put a very heavy coating
of a very high electric resistance & tenacity
material which will
permit of rough handling

The wire so coated is very useful in winding the rotating bobbins of Dynamo Electric machines, as the insulation is very high and it stands very high temperature without softening. it also radiates heat with great facility being black,

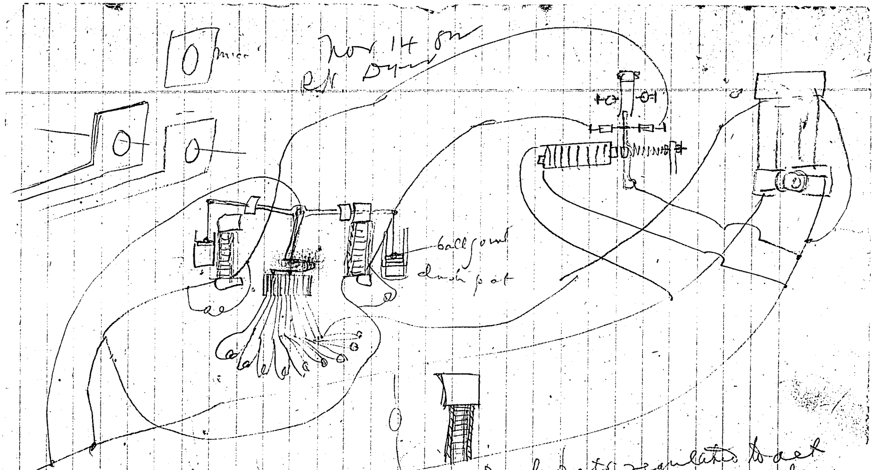

~~St~~ Long pipe heated by steam
C
d
X

Wire passes through the hollow pipe which is heated by steam - and dries sufficiently to permit the being wound on the roll X without sticking. B is the bath - C the Coil of wire d the stripper to wipe off

The surplus varnish -

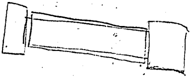
New York, Nov. 24, 1882.
W. W. Seeley

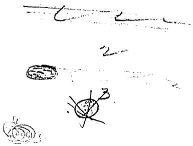
Nov 14 9m
RN Dyn



Dash pots regulated to act
in unison with charging & disch
of the mgts of dyn. to p[illegible] change of [illegible] to produce course
Shunt around magnets to prevent spark
for reversed current. to prevent [illegible]
[illegible] cables [illegible] currents [illegible]

[illegible]




2
3

Patent.

I take several long thin fibres such as Ramie twist them together to form a thread and secure their ends by a plastic compound of Carbon & sugar or Hydrocarbon & Carbonize the filament under strain ~~or~~ pressure or bath. —

This produces a filament consisting of a great number of ~~separate~~ individual but continuous fibres and gives a very elastic & even filament

Claim A flex filament for Carbonization formed of a number of continuous fibres.

2nd A flexible filament of Carbon formed of a number of Continuous fibres,

3rd fastening the ends of such an aggregated filament by a plastic Carbonizable Compound.

4. A flexible filament of Carbon for giving light by incandescence formed of a number of continuous fibres placed in a ~~glass chamber made entirely of glass~~ from which the air has been exhausted

Etc.

[illegible] Nov. 6, '78 H.W. Seely

See'y
I gave you a patent to write where I used several thin Continuous fibres -

add -

The fibres may be laid straight and Carbonized and afterwards ~~the proper number are taken~~ they ~~any~~ may be twisted together tightly by means of the ^{pt} Carbon Ends and while so twisted are clamped in the clamps upon the leading in wire of the lamp and may then be Electroplated thereto while the fibres are under Torsion, If the fibres have been twisted previous to Carbonization ①? they must be against twisted + placed under Torsion while being sealed into the Lamp,

26,000,000
.06
1,560,000

26,000,000
52 | 1040,000,000 | 200,000
104

6

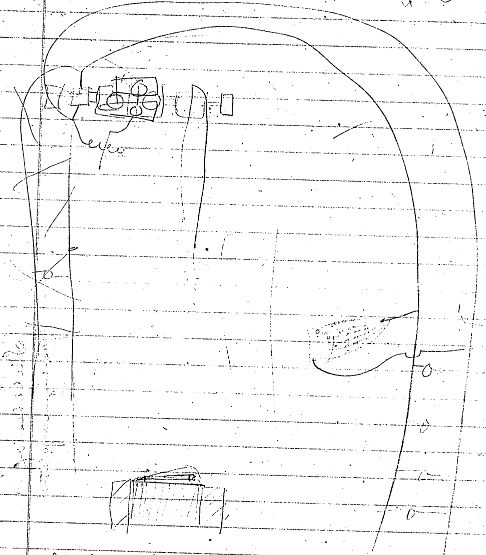
7 | 200,000
16 | 2857 | 1 | 1785,68
16
125
112
137
128
91
80
110
96
140
8

64 | 1785.68
29.7.61
60
1785.60

.46
60 | 29.75
.46
75
60
150

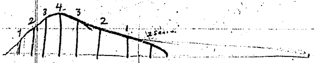
Sketches of
gas-engine regulator

~~Detail of Commutator~~

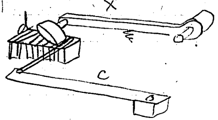


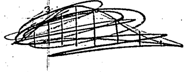
Detail of Circuit

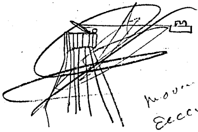
Lamps



Curve Shewing acceleration Speed due to Explosion in gas Eng 2 means how 2 Lamps thrown in

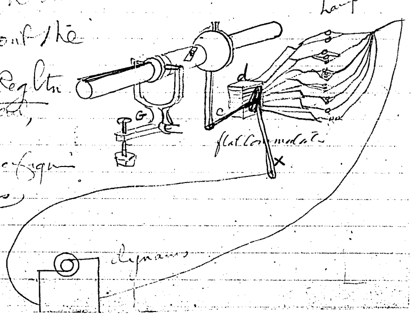






moving G shift
Eccentric

Seely Dont forget about the gas Engine Reglt ~~[illegible]~~ patent, You have some figures & Explanations


Lamps
G
d
C
flat Commutator
X
dynamo

BERGMANN & CO.
108-112 WOOSTER STREET.
(BY APPOINTMENT.)
MANUFACTURERS OF EDISON'S INVENTIONS,
EDISON'S ELECTRIC LIGHT APPLIANCES A SPECIALTY.

New York, 1882

Seely.

Write patent on method of ~~render [illegible]~~ Equalizing the Electromotiveforce of Dynamo Machines driven by Gas Engines -

Gas Engines are worked by explosions & the Speed is consequently irregular the Engine accelerating at Each Explosion Causes the light to increase in intensity To obviate this I place upon the ~~reciprocat~~ rotating portion of the Engine an Eccentric or Cam. which cam may be set in any position. a strap over the Cam carries a rod or arm which serves to close and open an Electric circuit.

The cam is so set that at the moment of Explosion the circuit is closed & a number of incandescent lamps are thrown across multiple arc in a circuit whereon there are other Lights, the effect of adding these several lights or wire resistance Equal thereto is to Check the rise in Electromotiveforce due to acceleration due to Explosion &

this render the lights constant notwithstanding the Engine runs unequally.

If an Otto Gas Engine is used the gas and air should always have the [illegible] same proportion as the amount of gas is diminished the relative proportion of the air should be diminished in this manner an explosion can be made to take place at every revolution and the compensation due to throwing in lamps or resistance, acts perfectly -

Instead of throwing resistance across multiple arc at the moment of Explosion the Circuit Controller may throw resistance in the circuit & thus accomplish the same purpose

~~[illegible]~~ In case Where Explosions do not occur at every 2d revolution, but invariable a ~~[illegible]~~ spring governor may be used the movement of the sleeve of which throws resistance in or out of circuit or across multiple arc

It is obvious that motion may be derived from any part of the gas Engine or

attachments connected therewith to control an electric contact device whereby compensation for difference of speed may be attained -
~~Even an Electromagnet~~ The electric compensating device may be placed on any mechanism controlled or operated by the gas Engine for instance on the shaft of the dynamo itself -
~~Even an Electromagnet with armature~~

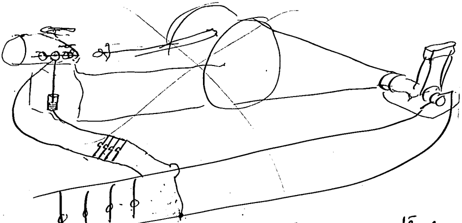
Claim very broadly a circuit controlling device on a gas Engine or mechanism controlled thereby for compensation for intermittency due to Explosions -
This is entirely novel & Prof Draper reports that it works beautifully it is very valuable in England so prepare an English ~~[illegible]~~ & Continental set =

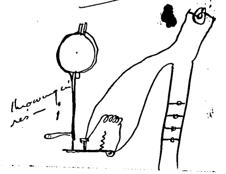
BERGMANN & CO.
108-112 WOOSTER STREET,
(BY APPOINTMENT.)
MANUFACTURERS OF EDISON'S INVENTIONS,
EDISON'S ELECTRIC LIGHT APPLIANCES A SPECIALTY.

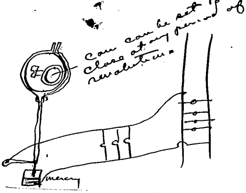
4

New York, 188

Get Schleuser & Shum's Co Catalogue or cut from Clarkes Books I think he has a description of the Otto Engine with drawing in some of his books & on the rotating shafts that lifts the inlet cock put an Eccentric.





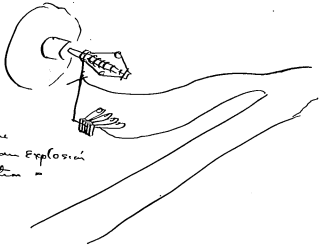


can can be set to close at any period of revolution.

BERGMANN & CO.
108-114 WOOSTER STREET,
(BY APPOINTMENT.)
MANUFACTURERS OF EDISON'S INVENTIONS,
EDISON'S ELECTRIC LIGHT APPLIANCES A SPECIALTY.

New York, 188

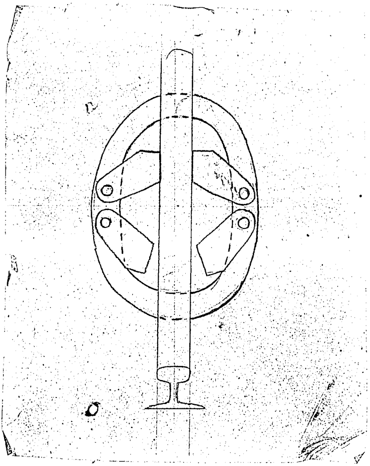
To

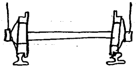


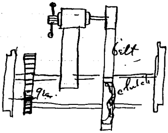
device where
there is not an Explosion
Every revolution =

TAE

New York Nov. 1, '82
H. W. Seely






belt
gea.
clutch

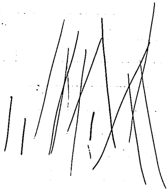
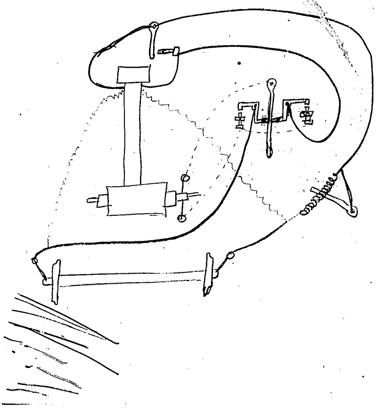
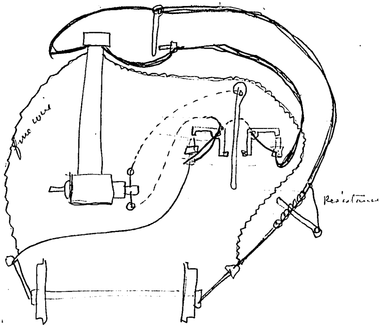


Fig 1



T. A. EDISON,

Menlo Park, N. J., ________ 1881.


fine wire
Resistance

Mention that ~~the~~ Coarse wire may be multiplied arcd across the circuit as well as the fine wire & may be disconnected after Loco is Started leaving fine wire to keep upfield –

Dyer: Railroad

Want to take out a new application in England and the U.S. If you do not think it sufficiently covered already

Ask that draughtsman down stairs for a picture of Mason Clutch = X is the mason clutch

R is resistance that are in the main circuit and permits of the slowing up of the train. This appears to be essential because in both mine & Siemens I dont remember where any means were shown for slowing up the train. You might mention that the field magnet could be weakened or the Commutator

brushes moved around from the Cab of the Locomotive by means of a rod with worm & worm wheel, but the method shewn is thought to be preferable in practice,

Another thing is Double wound field magnet so that in ~~starting from a state of rest~~ cases where the locomotive is slowed down very considerably by heavy load the armature will not cut ~~all the~~ too much current away from the wire upon the field If we had a single field & this was multiple arc'd across the armature It would have sufficient

Current passing through it,
to produce the requisite field
owing to the Counter EMforce
of the revolving armature
but if this was slowed
up very much the fall
off Electromotive force
in the armature would
be so great that the
field wire would get
very little current hence
the power of the machine
would rapidly diminish
to prevent this I not
only keep the fine wire
on the field across
& throw in a coarse wire
Coil right in the same
circuit as the bobbin
or in other words make it
a Dynamo for a while,
this keeps the field up

and when the load becomes
lighter etc the lever G
cuts the coarse wire out
of the main circuit)

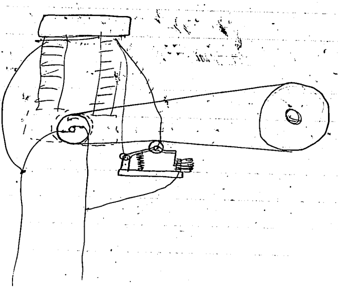
d d is the fine wire
regular field wire,

Did Siemens take Current
off of more than one
wheel, I think not.
I remember I had another
US application where
this was shown - get this
& take what is good out
of it for the new English,

I propose to put a pinion gear
on the shaft where X is
meshing into a large gear
on the main driver -
I wonder if we couldnt get

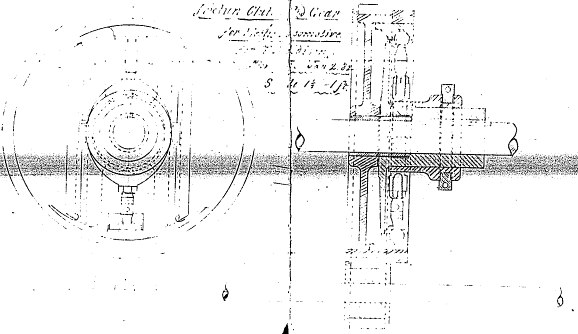
a Combination claim of belts, friction clutch or Equivalent disconnecting mechanism and gears,

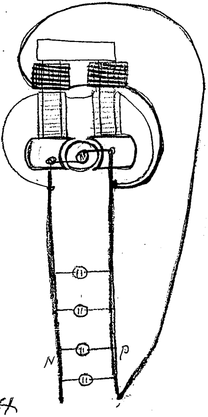
Have we in any our cases spoken of nickel plated ends of rails, nickel plated fish plate —
also Japanned rails —



Regulator = an arm carrying a wheel runs against the driving side of the belt & is held up against the ~~belt~~ belt by a powerful spring as load increases the arm is thrown downward. Compressing the spring & cutting out resistance field thus regulating the EMF.

Wheeler
N.Y. Jan. 6, '82


Friction Clutch Gear
for Electric Locomotive
Jan 2 82
Scale 1½ = 1 ft


N
P
11
11
11
11

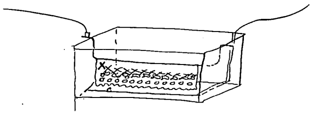
4

8,

Witness
S D Mott

Jany 17 1882
TAE

Patent,



Dyer =
New patent,

I take Cloth with various figures, Lace, Baskets of wickerwork or any article of manufacture made of Carbonizable material, Carbonize the same under steam pressure or both to prevent distortion, & make them into articles of Carbon still preserving their form, I then connect them to the poles of a Battery or other source of Elec in an Electrolytic Bath & deposit Copper, Gold or other metals over their Entire surface of the required thickness, They are then taken from the Bath & straightened if distorted

and the same is a new article of manufacture
by a new process useful for ornamental
& other purposes

Claim 1st new article of manufacture
Electroplated Carbonized goods,

2nd
Process ~~##~~

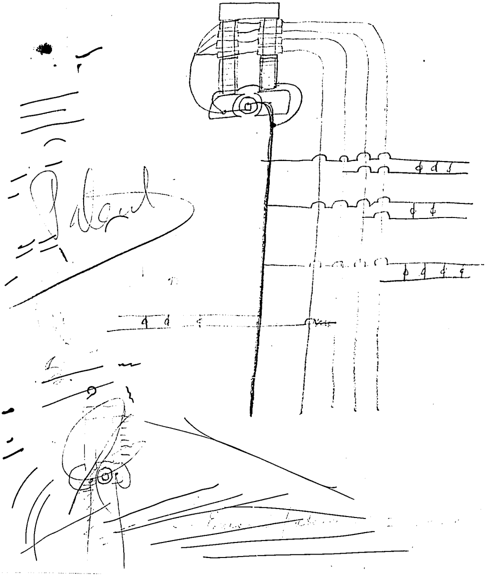
3rd Carbonizing woven or plaited goods or ~~&~~
articles ~~from~~ manufactured from Carbonizable
materials & Electroplating the same after
Carbonization

Etc

Etc — T A Edison —

W. Wiley
Rec'd Oct. 2/82

Filed January 18th 1882
S D Mott



Oct. 28, 1882
H.W. Seely.

Hollow Carbon filament

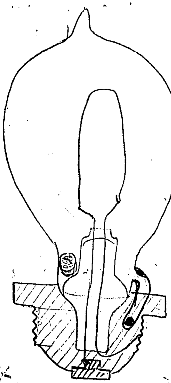
I make these by wrapping a wire of zinc or other metal with tissue paper or coating it with pulp or cellulose in any form after pressing to consolidate the fibre I withdraw the core, or eat it away by acid. Especially latter process if the cellulose is to be gelatinized by hydrofluoric acid. These hollow filaments are bent in shape & carbonized in the regular manner — These filmts may be square oval or any shape.

Claim a hollow filament of Carbonizable material

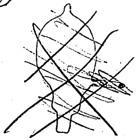
2. a Hollow filament of Carbon —

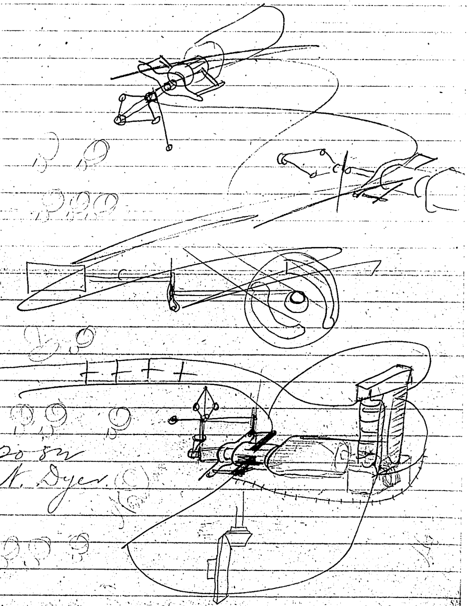
Mention that wires formed of hard pitch, Celluloid, Resins can be coated with cellulose & treated & afterwards the Resins can be dissolved out by solvents —

— January 1882 —

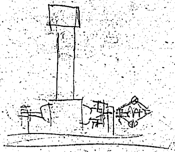


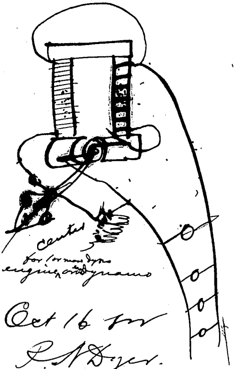
Witness
S. D. Mott
May 21 1882





Oct 20 84
R. N. Dyer.





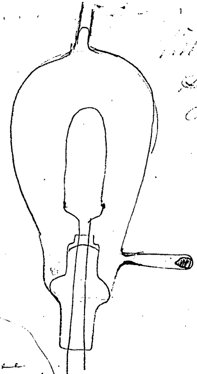
for 1 or more dyns
On engine and dynamo

Oct 16 79

P. N. Dyer.

Coarse
winding on one leg,
or over fine winding
of both legs.

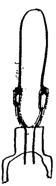
Witness
S. D. Mott
Jany 21st 1882



Another case
with crystals of
napthaline

See if we have any
application for this in
US also England —

Patent on guarded or insulated clamps or terminals =



The Metallic portion of the leading in wire & the clamp and ~~nearly~~ all of the ~~brand~~ broadened End of the Carbon filament is covered with several Coats of Japanned varnish well baked ~~so that this~~ ~~nearly partially~~ this protection ~~pro~~ restrains to

(V)

a considerable extent the Electrical Carrying from the Carbon Loop by diminishing the area of Contact ~~[illegible]~~ of the Electrode with the residual air thus increasing the resistance of the discharging space,

Claim Insulating the metallic terminals within the globe of an incandescent Electric Lamp –

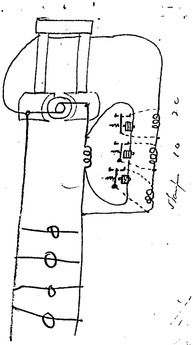
Insulating the terminals ~~as~~ of the filament of carbon within the Vacuum chamber

~~the use of Japan varnish or other Varnishes having a drying oil as a base an ingredient in~~

Mention Collodion may be used & other Compounds such as gelatine glue which can be applied in a plastic state,

New York
Oct. 13, 82

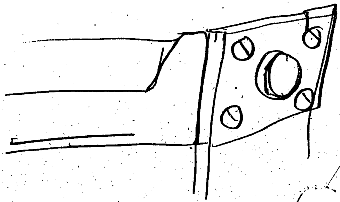
W.H.Seely.



[illegible]

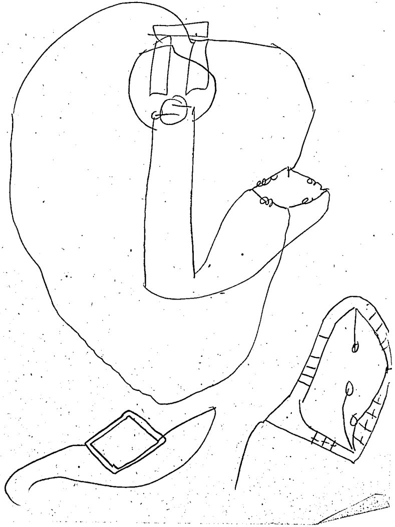
S D Mott

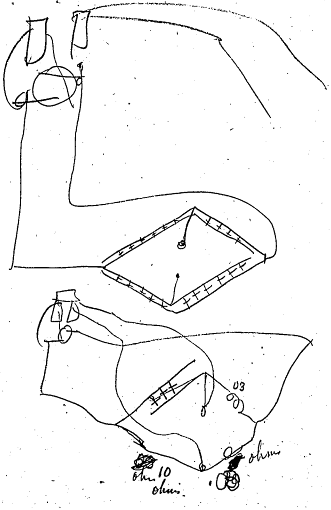
Jany 21 1882

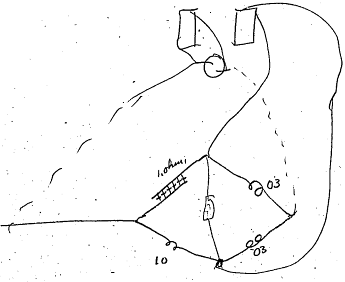


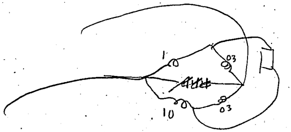
These sheets left by Mr. Edison with me, this 11th day of October, 1882

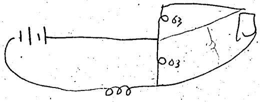
Rich'd N. Dyer

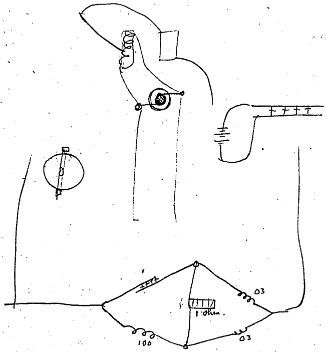


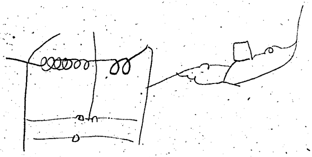

03
ohms
10
ohms
ohms
.03

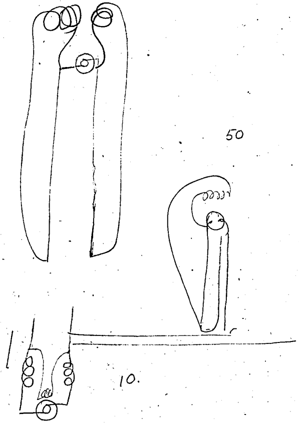

1.ohms
03
10
.03

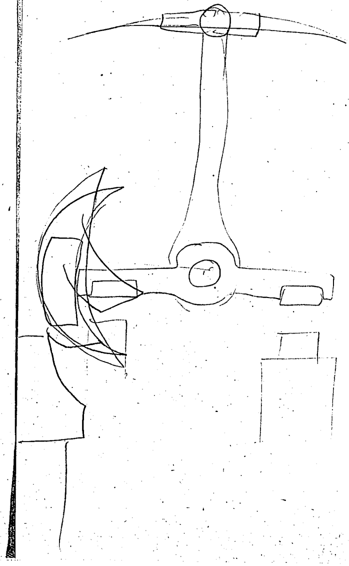


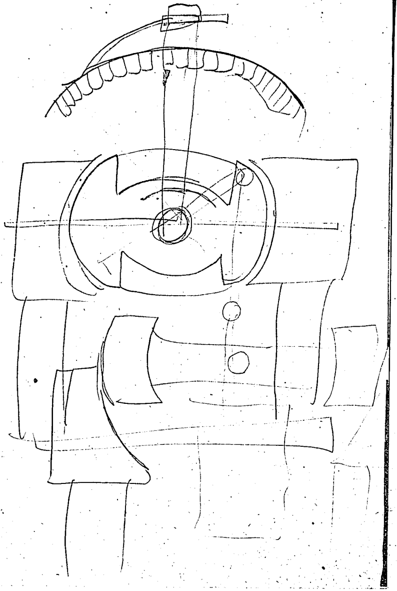

03
03


1 ohm.




50
10.





200

56/1000 | 18
56
440
448

250 ft lbs per ohm
500 feet per ohm
272 turns per ohm

9 turns.

22
9
198

~~24~~ 16 feet,

22 | 500 | 22
44
44

36
18
288
36
648
16
3888
648
10368

18
36
108
54
648
22
1296
1296
1296
14259
128314 | 10692

40 | 20000 | 500
2000

500
20000

11000
40
440000

12
500
22 | 6000 | 272
44
160
154
26000 feet

44 | 11000 | 250
88
220
220

250.

12 | 12831
12
83
72
108
3

40.

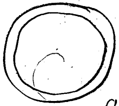
40 | 440000
11000
40
440000
10000
440000

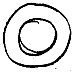
36
5
180
22
360
3600
3964
15840

12 | 15840 | 1320
12
38
36
24
24

48
2
96
7
672

26
2
52
7
364.





672 4
364

96
6
576

728

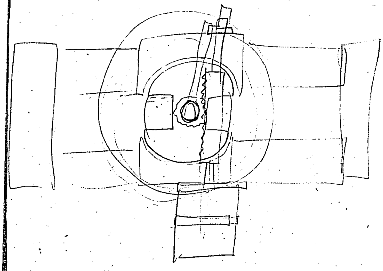
7

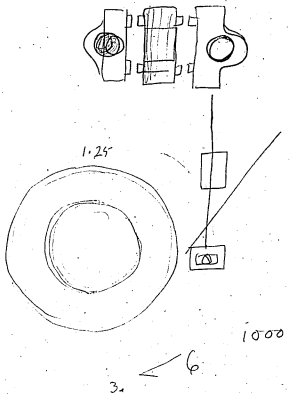
14

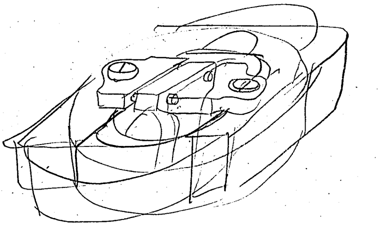
576
364
212.

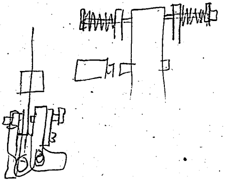
3 | 364
121

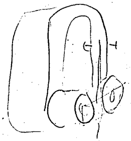
3 | 576
115

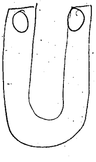


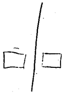

1.25
1000
6
3

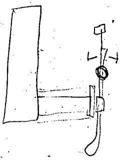












20000 feet

.44
6
264

220
220
4400
440
4840

2

44) ~~2~~60 (5.6
220
300

230
230
6900
460
5290

250
250
12500
500
62500

44) 11000 (250.
88
220
220

250.
50
12500

40) 250 (6
240

.44
9
396.

440
625
2200
880
2640
240 275000

440
529
440
21160
2116
232760

11000
40
440,000

44
4
17.6

100)

176.

50) 440.00 (88.00
400
400
400

100) 4400

150) 8800 (176
50
380
350
300

235
235
1175
705
470
55225

240
240
9600

552
440
22080
2208
242880

24 37/100 Vabers ~~pe~~

20,000. feet

2½/100 of ohm.
330 feet.

4) 1320
330.

60.

660

4 no 10

1700 feet per ohm

36
20
720.
22
1440
1440
15840

12) 15840 (1320
12
38
36
24
24

51
25
12
6

.050

4) 1700
425 ~~feet per ohm~~

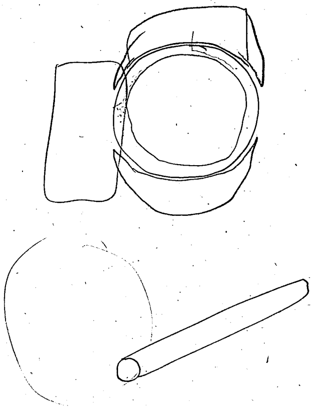
30 - 660
15 1320
7½ 2640
3.75 5280
1.85

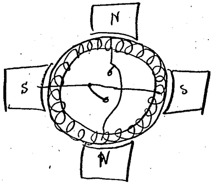
1/5 of

330) 1700 (5.1
1650
500

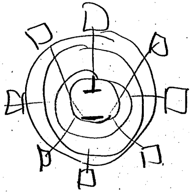
50
25
12

20
10
5





38r



26256 at 250 42 each
~~31100~~
20 ~~25~~ " 350 26 "

775

15

2 1.00
2 50
4 25
8 12

12) 600 (50.
6

50. 100 12
.12 50 50
038 25 60

7 10

2·37 Vebers on 20000 feet.
1 " Veber with 1 Lamp on

2½ ohms 330 feet. 231578

1.90) 440.000000 (231578
380
600
570
300
190
1100
950
1500
1330
1700
1520

60 Vebers.

60. 330
30 660
15 1320
7.50 2640
3.75 5280
1.87 10560
·93 21120

25) 1660 (66
~~150~~
160
150

166

L
10 10
5 20
3) 250 (83/8 40
1.
10

16
60) 100 (1.66
60
400
360
400

1.66.0
14
8
2.50
7.90.50

21 / 166 / 148 / 78.

75/100(1.3
75
250
225

1.66
14.
1.80

1.30
150 65
32
300 .16
.8

1200/1400(1.16
1200
2000
1200
8000

14)166(11.~~600~~
14
26
14
120
112

~~8~~80

80
1000.

84/100 11/100(9. Volts fall.
99

20/100/5.

60/115(1.9
60
550
540

14)190(13.5
14
50
42
80
70

13/100(~~8~~.7.
91
90

950
3
2850
1200
000
5700
2850
3420000.00(28.50.
12)
34
24
102
96
60
600

42
3
126
2500
6300
2520
12)31500(2625
24
75
72
30
24
60

3/5200
1740
2
3480

47
23
141
250
7050
282
35250

12) 35250 / 2937
24
112
108
45
36
90

12) 33750 / 2812
24
97
96
15
120
3

44 } feed
44 }
20 lev Ends
24 Con
48 2 bearings
24 Coupling
36 Eng brgs
22 Crank
18 gov
280

3 / 50
16-2

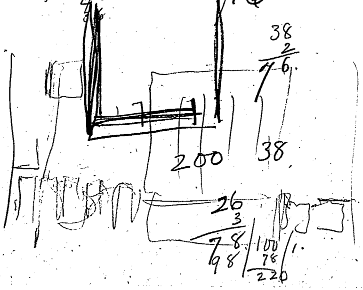
4 / 38 (
9-2

12 / 280 / 23
240
40

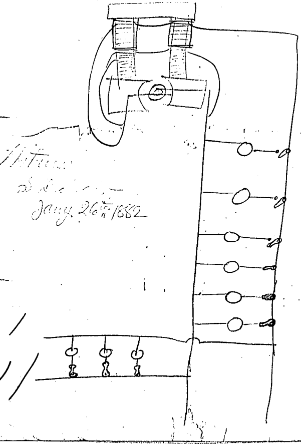
3 / 50
16

38
2
76

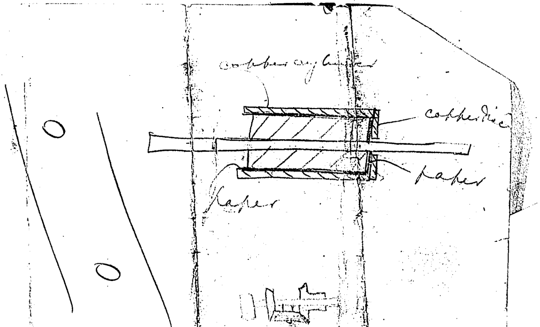
26
3
78
98 / 100 / 1.
78
220



Look up Brush
& if he doesnt
cover this position



Witness
[illegible]
Jany 26th 1882


copper cylinder
copper disc
paper
paper

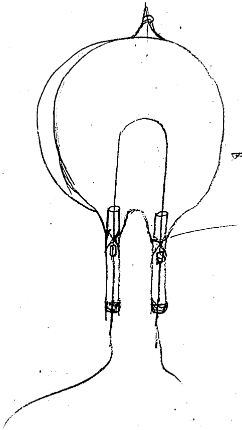


Fig 1

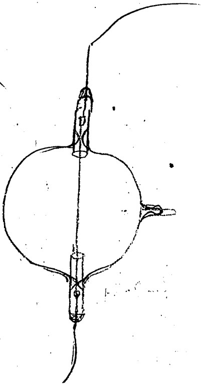
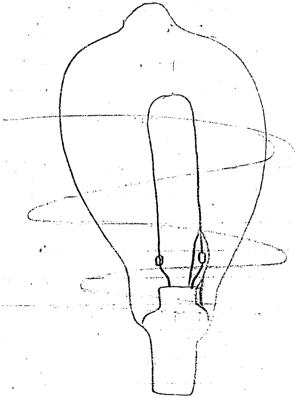
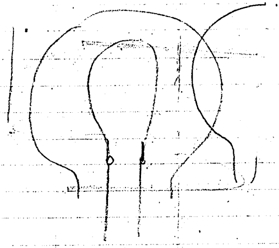


Fig 2

Jan 26 82

Witness
Richd N. Dyer.





THE EDISON LAMP CO.,

Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Take out this patent U.S.

Menlo Park, N. J., ... 188

Object process of ~~[illegible]~~ ~~[illegible]~~ Manufacturing Electric Lamps

Invention consists in ~~first Exhausting the air from the containing Chamber by means of Charcoal~~ process of Completing an incandesc Electric Lamp first by heating the Chamber Externally Combining therewith a chamber containing an absorbant of gases such as Charcoal, heating the Charcoal to drive out all the gases possible

---

THE EDISON LAMP CO.,

Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Menlo Park, N. J., ... 188

②

becomes the charcoal chamber is connected to the lamp - Connecting the Charcoal Chamber to the lamp while both are hot, The use of a spark gauge to ascertain the state of the vacuum. When sufficiently high the ~~Carb~~ Lamp is connected to the Electric Circuit & gradually heated by the Current throwing out air which is absorbed by the charcoal, ~~When~~ the lamp ~~comes up~~ is ~~brilliant~~ brought up beyond the point where it is to be burned regularly, it is allowed to burn~~d~~ for sometime, then is sealed off at X.

The tube C is then affixed to another lamp and the same process takes place. The Tube C & rubber joint d might be dispensed with and the mouth of the Charcoal Chamber E extended so as to be sealed on each time to a lamp.

By this process Vacuum pump can be dispensed with although in some instances a steam operated Vacuum pump

may be used with economy to ~~obtain~~ partially exhaust the globe =

I am aware that Charcoal has been used with a mercury pump (See my other patent). but the operation of Electrical treatment of the incandescent Conduct was done while the Lamp was connected to the pump — The main object of this invention is to save the Expense of a ~~vast~~ great number of pumps necessarily used on account of the necessity of slowly heating the incandescent Conductor

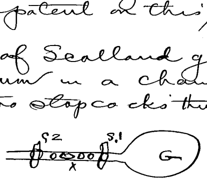
THE EDISON LAMP CO.,

Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Menlo Park, N. J., ... 188

Dick - Want to get a process patent on this,

Dewar of Scotland got a Vacuum in a chamber by two stopcocks thus



S S are stop Cocks X the Charcoal. he heated the Charcoal with S1 closed this threw out the air he closed S2 & opened S1 the charcl absorbed air from G. he then Closed S1 & opened S2 & heated charcoal again

---

Menlo Park, N. J., ... 188

but ~~I dont claim~~ he never could get a high vacuum this way as the space containing the charcoal in manipulating the cox would always keep the vacuum down a little,

Our device is different, Besides As with a lamp & Electrical heating of the Conductor is another point etc.

~~Others~~ you can mention drying substances such as phosphoric anhydride may be used in connection with the charcoal to ~~dry the~~ absorb the aqueous

THE EDISON LAMP CO.,

Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

7

Menlo Park, N. J., 188

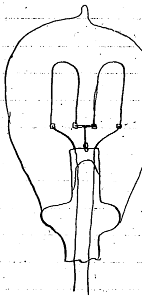
Vapor in the Lamp,

T A Edison

Jany 27 1882

Patent 1

Fig 1



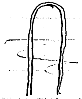


Fig 2

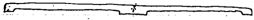
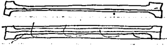


Fig 3

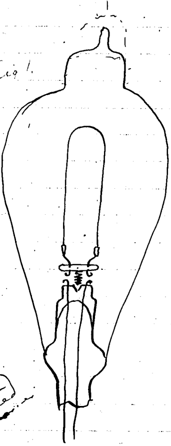


Patent Lamp consisting of two or more seperate filiments of Flexible Carbon Cut from the same material and Carbonized together so as to insure same quality as to resistance & Economy to permit the two or more filiments to be worked in series, —

NY. Oct. 9, 80
J. Hendley

Patent 3

Fig 1.



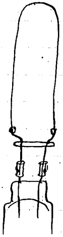


Fig 2||

[illegible] 2 or
more filaments
may be put in
the two used
in arc or series

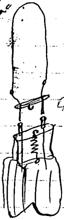


Fig 3

Fig 6

Fig 5

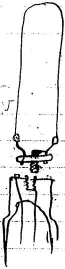
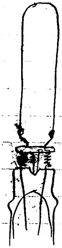


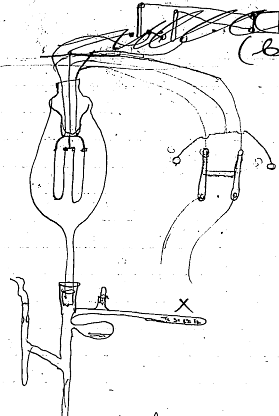
Fig 4



New York Oct. 9, '80

H. W. Seely

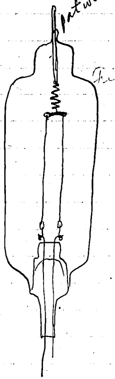
(Case No. 509)



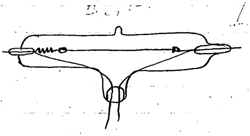
two Carbon flix filaments in series, Vacuum obtained. Each heated by Current. and brought up to incandescence seperately. after the air is worked out of each Carbon + vacuum obtained both Carbons are connected in series and brought up ~~so one shall~~ ~~the bright~~ ~~be at 16 candles or other proper~~ Stand to incandescence. If one is brighter than the other. It may be reduced until its brilliancy is the same as the other, by disconnecting the ~~two~~ + and bringing

N.Y. Oct. 9, '80

The brightest one upto incandescen and heating X which contains Cyanide of Mercury Cyanogen is set free which being decomposed deposits carbon upon the filament and reduces its Resistance, this is done momentarily then the two Carbons are connected in series by a switch & watched to see if both are Equal in illuminating power. if the one that was the brightest is still too bright more cyanogen is set free and deposited & this goes on until both filaments are equal in illuminating power when connected in series, afterwards the two filament are braught upto a greater incandescen than they are afterward to be burned a high vacuum obtained and the Lamp is sealed off —

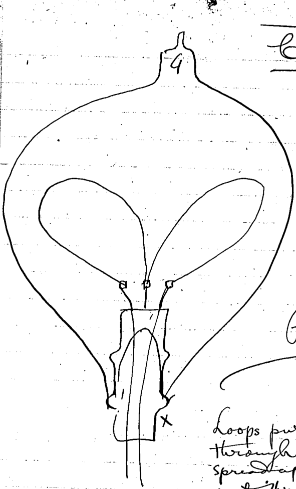

pat wire
Fig

Patent,



New York
Oct 9, '82

Case 508



Patent

Loops put together & put through X - afterward spread apart by a tool put through 9.

New York
Oct. 9 '82
H. W. Seely

Patent =

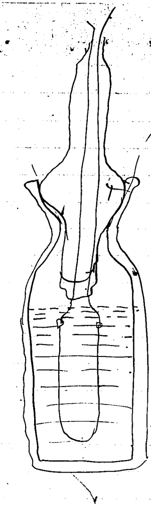
~~Treating~~ ~~parchmentizing~~ gelatinizing vegitable fibre by Hydrofluoric acid

The material may be thread paper bambo or other vegitable fibre in the form of a flexible filament ready for Carbonization or sheets & strips from which the filaments may be cut or the process may be carried to such an extent as to completely gelatinize the vegitable materials the gelatine like mass being pressed free as possible of acid & then pressed in sheets by heavy pressure from which the filaments may be cut or punched, no washing of the material is required as Hydrofluoric acid gradually decomposes

Hy

New York Oct. 9, '88
H. W. Seely

Patent 2



gas set free
passing out
+ not falling

N.Y. Oct. 9, '82

Filment is brought up to dull red in the hydrocarbon oil Bisulphide Carbon or other liquid whose gas is not decomposable at a low red heat. This permits of ascertaining promptly if a Carbon filament is perfect before putting in lamp the filament is not allowed to reach a temperature sufficient to decompose in the slightest the gas or deposit anything upon the Carbon if a weak or rather bright or duller spot is seen the filament is not used in a lamp.

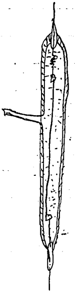
If it is desired to change the resistance of the filament render it of lower resistance, it is taken out of soaked in sugar or ~~mat~~ carbonizable material not soluable in the menstrum used and then immersed in the bath and brought up to red heat by the current the sugar or other substance being decomposed and carbonized within the pores of the carbon at the same time it is seen that the carbonization is even for if un even spot will be seen & the filament is not used —

N.Y. Oct. 9, '82
H W Seely

"Carbon does not decompose oxide in either presence of aqueous vapors

Patent

~~tube~~ filled with ~~the~~ filament of Carbon & then packed around it very finely powdered Zirconia, Magnesia, Lime or other alumina or even metallic oxide or even boron & then exhausting by heating the glass by Extraneous source heat while exhausting then when exhausted the Carbon is gradually brot to incandescen & then brought up to such a temperature as to melt the oxide in proximity to the Carbon which coats the Carbon with an oxide - the filament is then ~~taken out~~ & put in clear globe Exhausted & brought to incandescence & sealed from the pump = object is to coat filament with non conductor & prevent Electrical Carrying of Carbon - thereby oxide being carried instead



The Coating may also be obtained by soaking the filament in an acetate of the oxide & then immersing the filament in a hydrocarbon Liquid & bring it up so as to decompose & set free the acetic acid Liberating lime upon the Carbon -

New York Oct 9, '82
HWSeeley.

Case 511

Patent,

Fig: 1

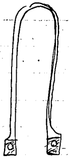
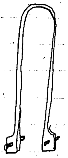
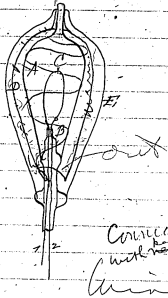


Fig: 2



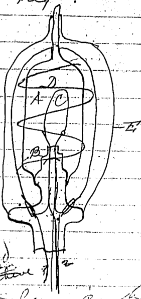
New York
Oct. 9, '82
H. W. Seely.

Fig 1



Run conductor in spiral directly on glass

Fig 2.



Connected with ~~negative~~ positive

Wires, or large carbon conductors, in Vacuum - Charge retained.

~~Ex~~ Carbon positive - Earth negative or zero - Hence glass so - Current makes glass positive - charges it & carrying is prevented

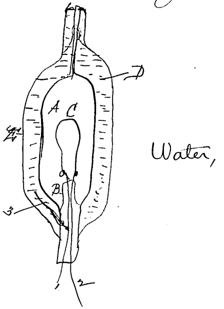
New York
Oct. 9, '82

H.W. Seely

Dyer:

Show this in double globe application

Fig. 3

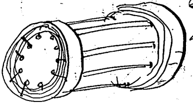


also mention that the rapidity of the discharge of the static current may be diminished by even filling the globe with, a transparent heavy oil or substance like Canada Balsam, ~~the co~~ Olive oil the whole of which would be changed by the wire immersed in it.

Ans Feby 14/82

Dyer

has the ring dynamo been taken out in England



Eng £20
U.S. $35

has the Worm & worm wheel automatic adjustment of the Swinging brush holder been taken out
magnets on each side with ratchet & pawl

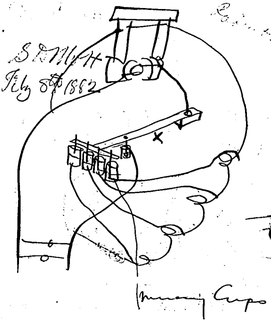
Both are important -

You have given me no report as to whether I would infringe Brush or if there is any valuable difference between Brush & this

over

[illegible] 224.511

S D Mott
Feby 8th 1882



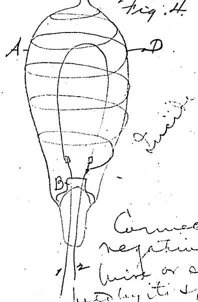
X ~~are~~ Expansion strip heated by main current

please advise =

Brush's pat 224511 does not describe the thermal device with sufficient clearness to prevent ob taining claims on above which while ~~[illegible]~~ specific [illegible]

Glass is brought to same potential as carbon.

Fig. 4.



Connect with negative, wire or sheet leading it & forming

Or if platinum it may be burned to the glass

Hydrochloric acid

gas residual

Resists electrical

carrying

Exhausted by hand-pump & they gas ~~accumulated~~

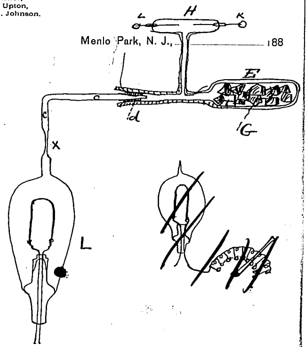
to glow in air at [illegible]

—February 1882—

THE EDISON LAMP CO.,

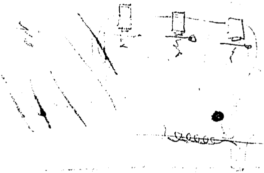
Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Menlo Park, N. J., ... 188

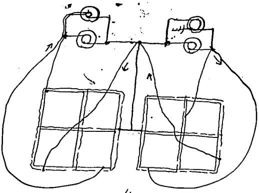


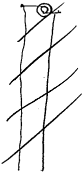
S. D. Mott
Feby 8th 1882

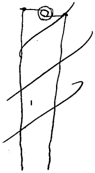
February 18

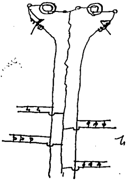


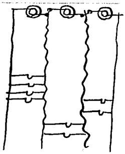
Patent Oct 2 882 R.N. Dyer.

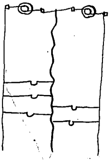

4

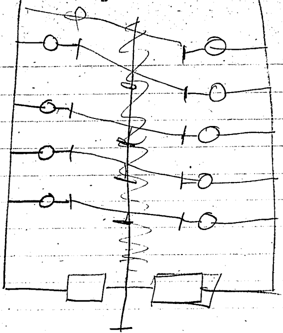


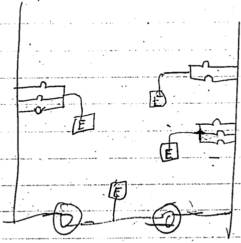


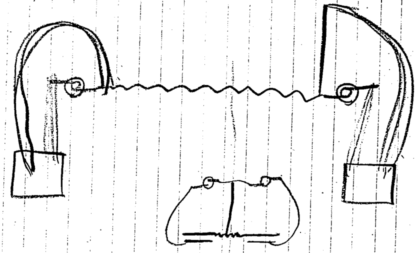

2

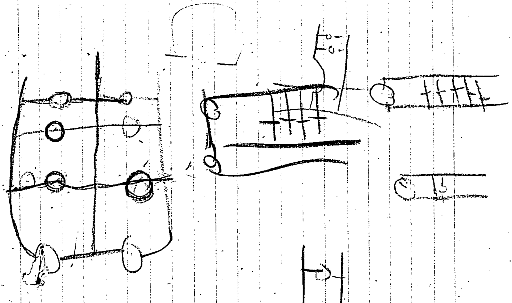

3

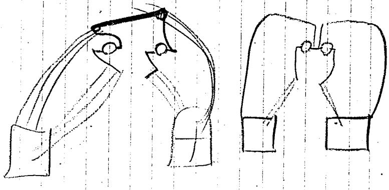

1

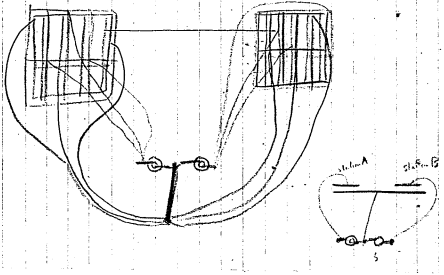


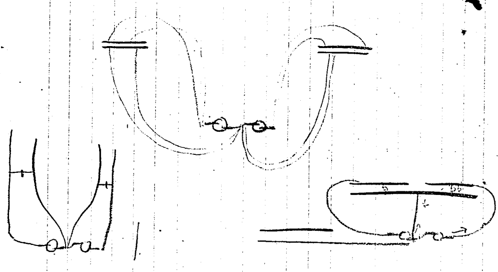

E
E
E
E

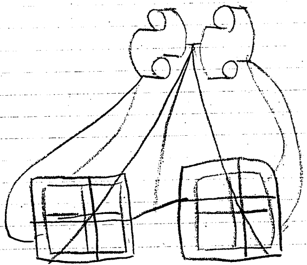


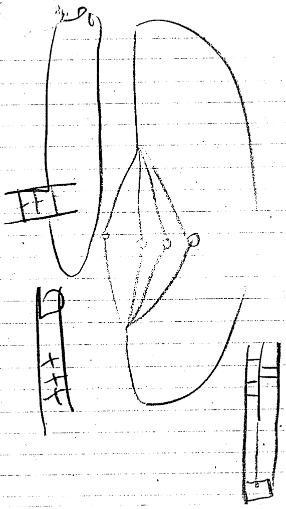





station A
station B
5



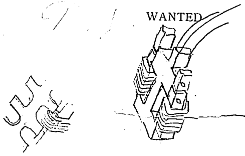




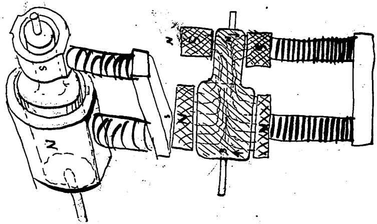
Form No. 22. 4, '81—1,000.

NO. LOCALITY

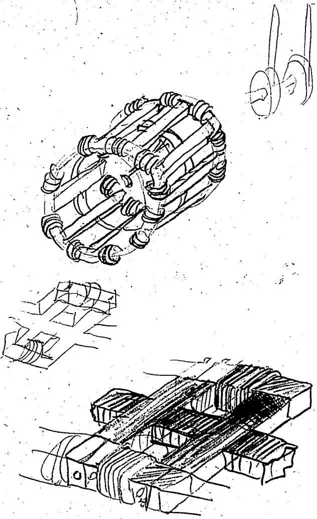
APPLICANT WANTED



Oct 3 82
R H Dyer

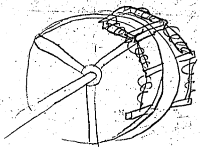

N
S
s
N
S
N
S
N
S
N

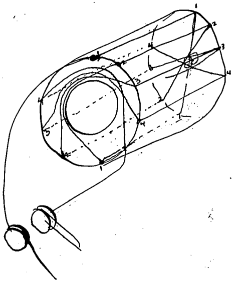
Oct 3 82
R H Dyer

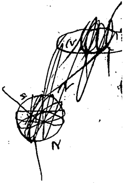


Oct 3 90

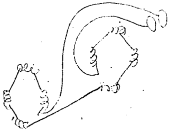
R A Dyer

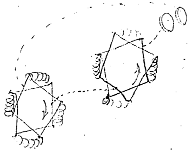



1
2
3
4
5
6
1
2
3
4
5
6
1

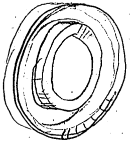


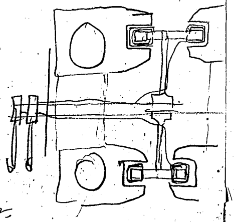
Oct 3 '87
R N Dyer





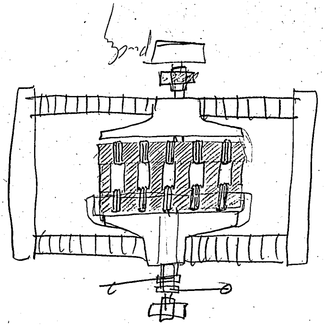
Oct. 3. '87.
R. N. Dyer





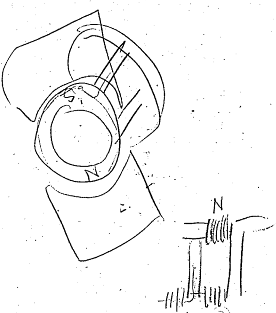
~~Oct 3 '82~~

R.N. Dyer



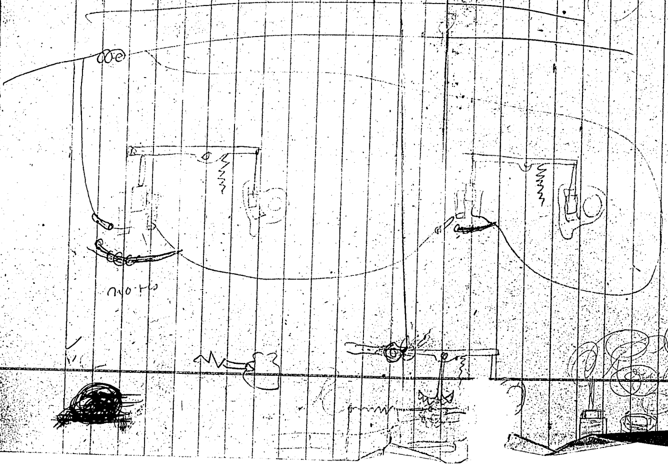
Oct 3. 82

R.N. Dyer

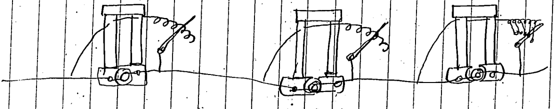

S
N
N

Sept 9 1882

No 1



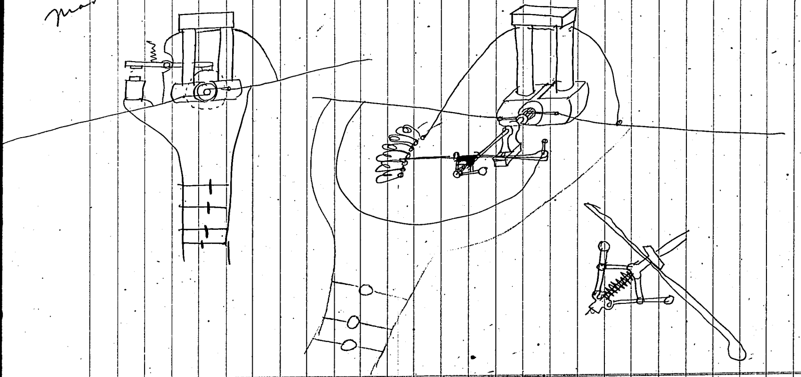
Mar 13 82



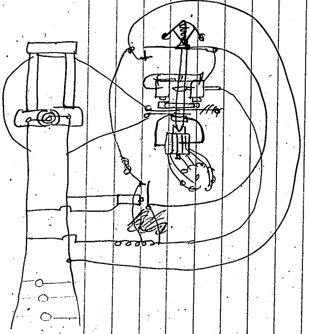
Patent several Dynamos worked Either as generator or motors all in series Each having its own field multipled arc'd across its armature with an adjustable resist in the field so that EMF or each can be adjusted separately -

Mar 13 80

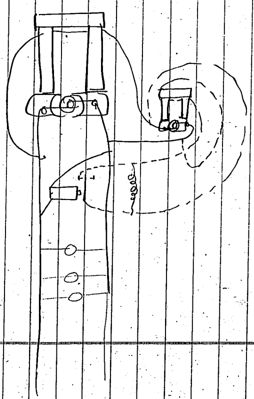
Details 2nd Patent Reducing EMF



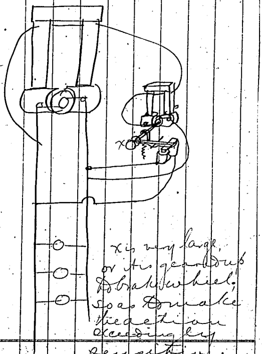
Mar 13 80



Do



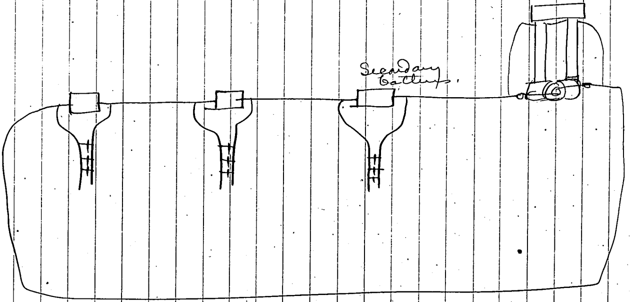
Reg field Isolated,



x is very large, or its geared up to brake wheel; so as to make the action exceedingly sensitive.

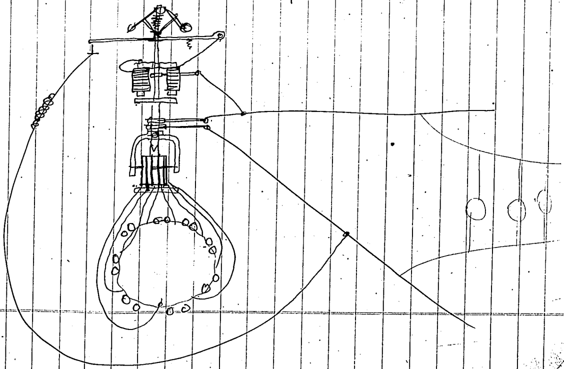
Mar 13 82

2nd patent Emf (Detail)

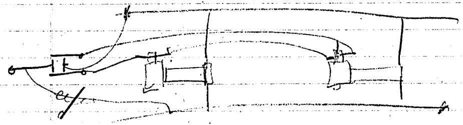

Secondary batterys.

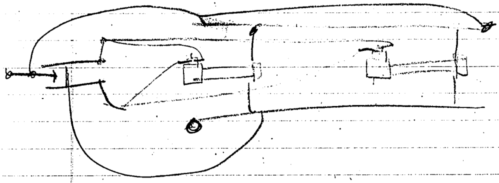
Mar 13 80

Details 2nd Emf patent



Mar 29th 82





Invention consists in effecting the Economical decomposition of various Substances Electrolytically by submitting such substance to Electrolysis when under high temperature & pressure:—

~~I have found that many substances~~

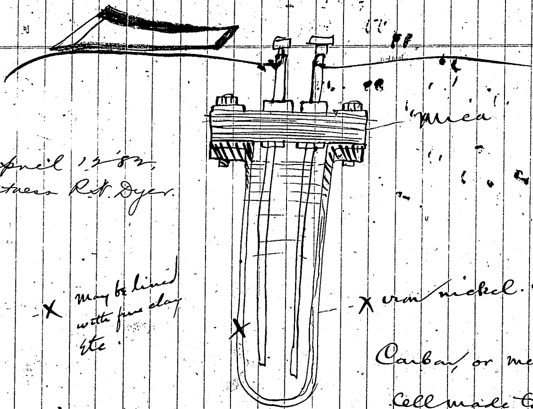
Heat tends to diminish the amount of Electric Energy required to effect the decomposition, and as this heat is obtained directly ~~from~~ from the combustion of fuel acting on the substance the process requires but a small amount of Electric Energy. ~~still at the [illegible] place~~ and this amount is still further diminished by the fact that nearly all compounds diminish the resistance by heat. ~~[illegible]~~ The more particular object of this invention is to act on substances which do not conduct at all at ordinary temperatures ~~[illegible]~~ just conduct sufficiently at very high temperature to permit of decomposition & as many of these substances are liquid at ordinary temperature the receptacle for effecting the decomposition must be such as to permit of high pressure

Claim:

A cell for electrolytic decomposition

The meth[illegible]

M

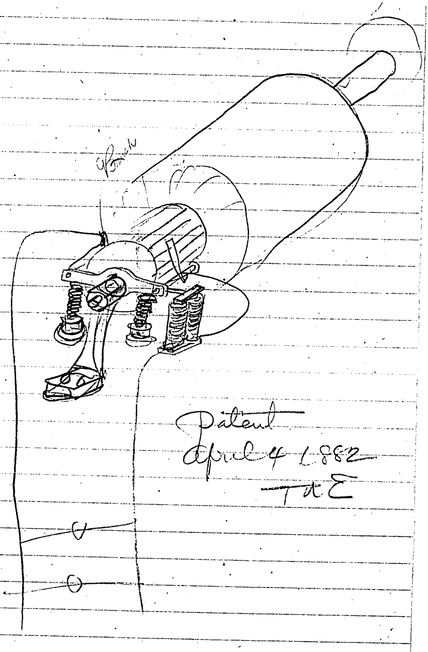


April 15 '82,
Witness Robt. Dyer.

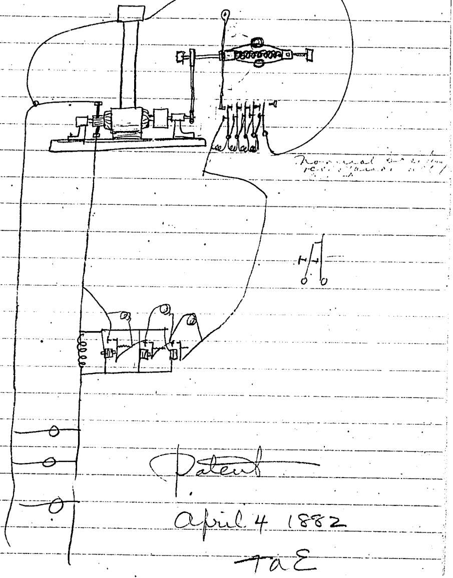
X may be lined with fire clay etc

X iron/nickel cell.

Carbon/ or metallic Electrodes.
Cell made to withstand several hundred lbs pressure to sq inch



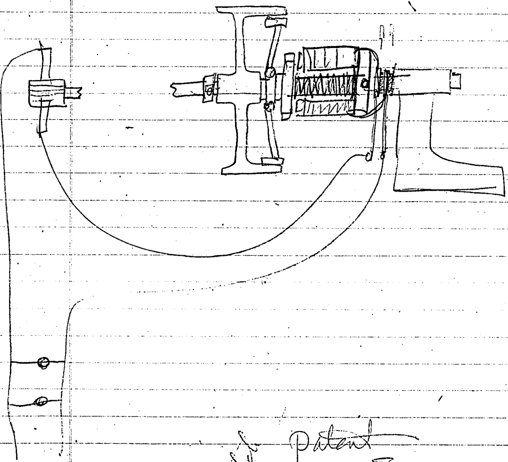
Patent
April 4 1882
TAE



Patent

April 4 1882

TAE

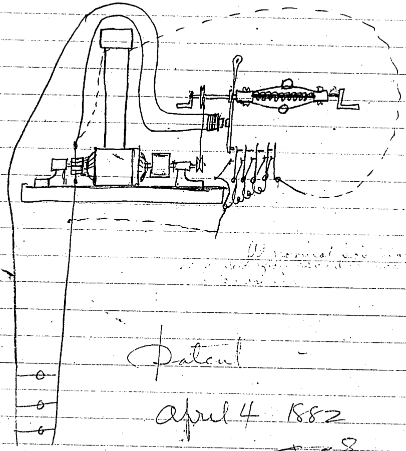


Patent

TAE

April 4 1882

Make Drawing with 3 sets of resistance in.



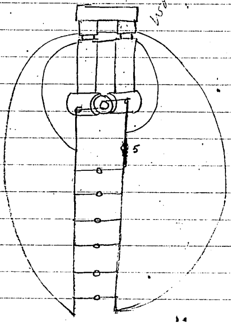
[illegible]

Patent

April 4 1882

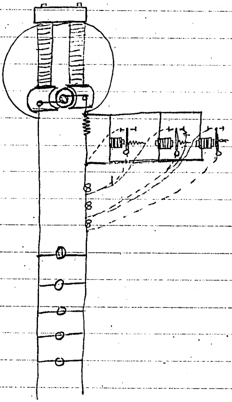
TAE

Wood Reverse



Apl 4 1884
TAE

Drop utilized. If not sufficient drop a resistance can be put in



1882
April 4. Patent
TAE

English No. 43

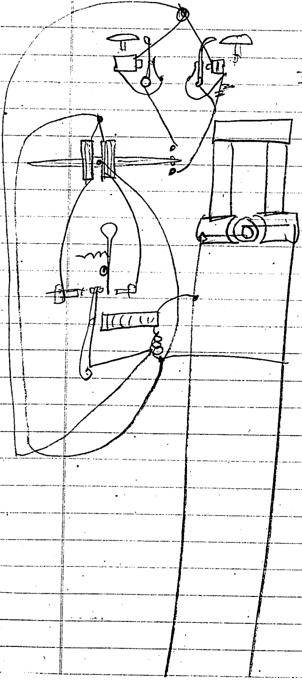
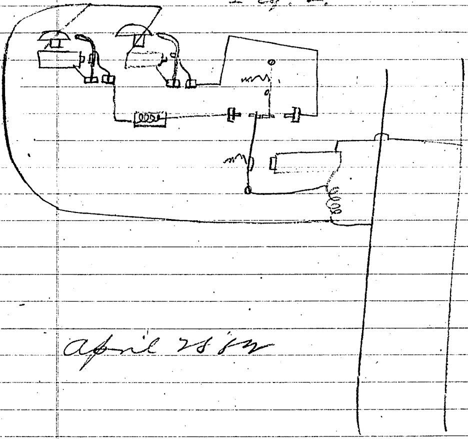


Fig 4.

April 28 82.

English No. 43

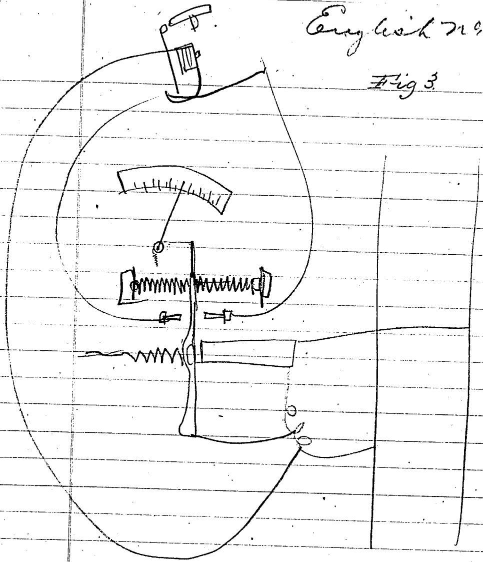
Fig. 2.



April 28 82

English No. 43

Fig 3.

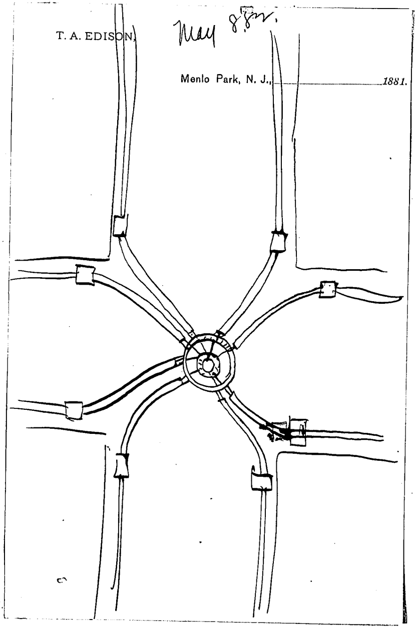


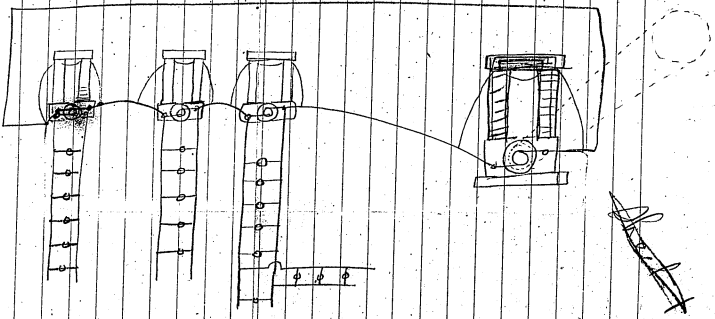
Apl 28 82

May 1882

T. A. EDISON, May 8 82.

Menlo Park, N. J., 1881.



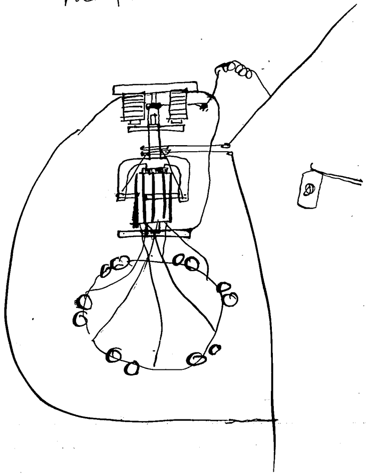


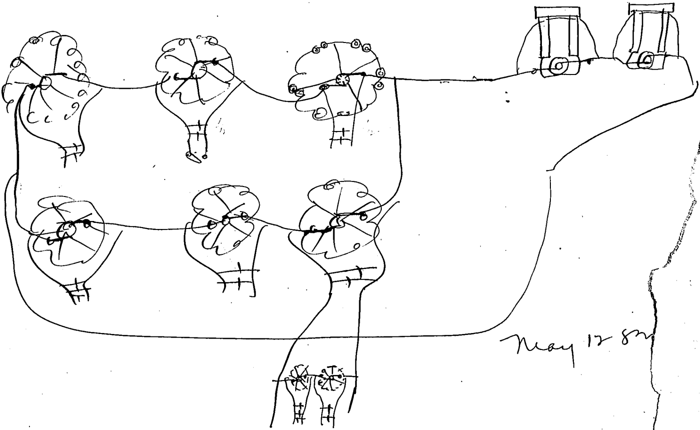
May 10th 1882

T. A. EDISON,

Menlo Park, N. J., ...1880.

May 1 1880





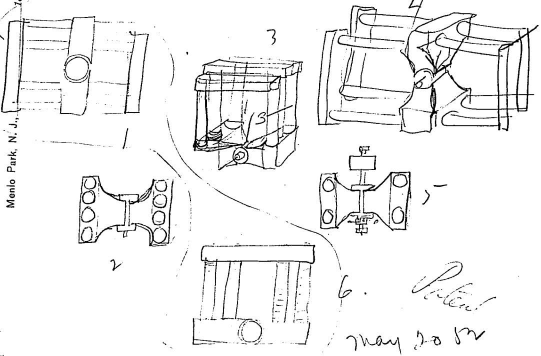
May 12 82

[illegible]

T. A. EDISON,

[illegible]

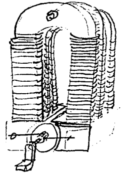
Menlo Park, N. J., 4 1881.



Patent

May 20 81

oncentration of fields
'ut in concentrated poles.



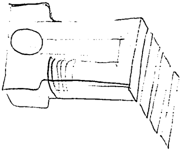
7

Edison

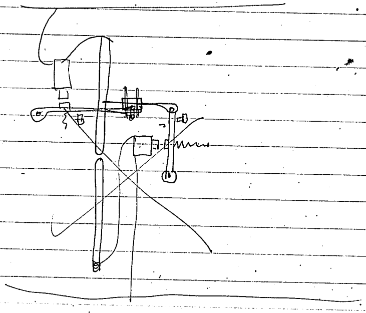
May 30 82

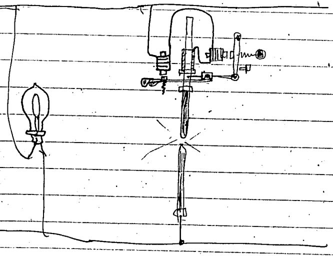
T. A. EDISON,

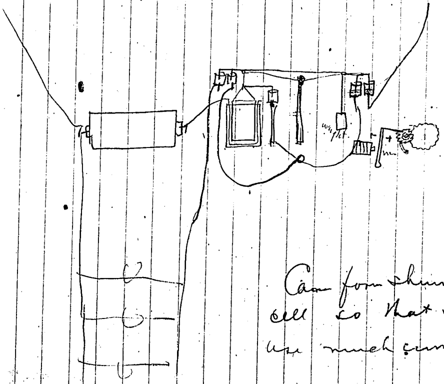
Menlo Park, N. J.,



May 27 '82
Witness. R. N. Dyer.





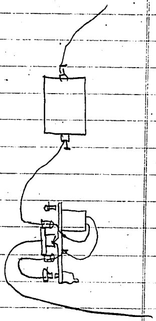


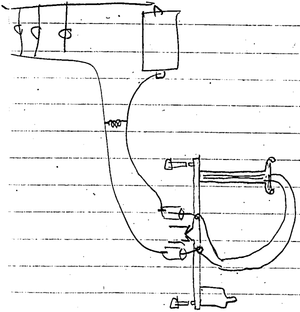
May 29 1882

TAE

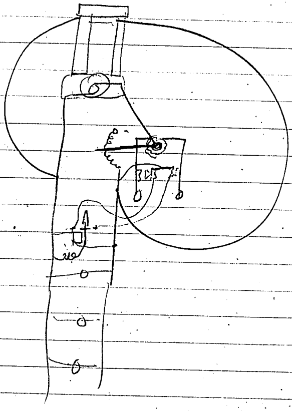
Can form shunt around cell so that it wont use much current.

May 29 80

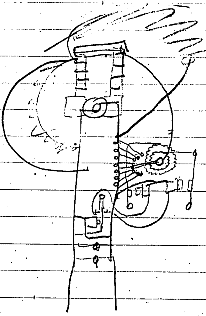




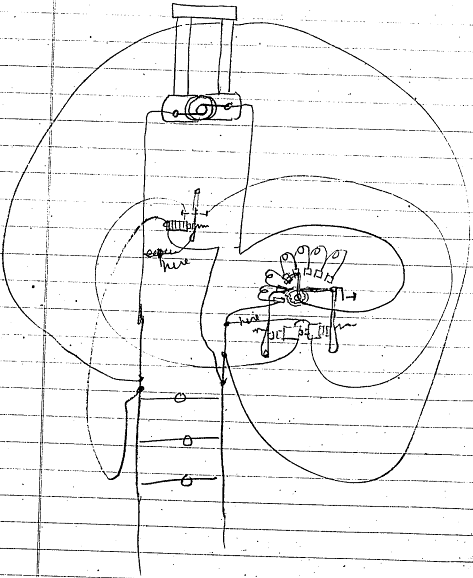
May 3, 5n



May 21 52



May 81 1882 TAE


copper wire
wire

Claim! flexible filaments of Carbon formed of Cellulose Carbon obtained from Cellulose or compounds of Cellulose dissolved by proper Solvents ~~[illegible]~~ + made into sheets or Membranes from which the ~~loop~~ Carbon filament may be punched or cut before or after ~~an~~ Carbonization or made into solid masses & subjected to heat & pressure whereby it is forced through dies as a fine filament &

pure Cellulose may be dissolved in ~~Cupric ammonium~~ Cuprammonic hydrate.

By means of heat and pressure the viscous pyroxyline may be formed into fine filaments and then carbonized.

June 7 82

flow colodion over glass
allow dry ~~[illegible]~~ put membrane
between sheets of paper or
metal and punch out in
proper form & carbonize under
strain & pressure -
also sheet Celluloid may cut in
proper shape & carbonized

—June—1882—

Compounds of Cellulose.

such as ~~[illegible]~~ trinitrocellulose.
soluble in Ethylic acetate

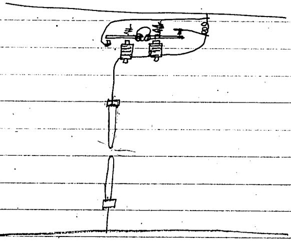
other Nitrates of Cellulose
are Soluble in Alcohol & Ether,
Alcohol & Camphor, acetone.
nitro Benzol,

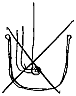
~~Other Carbohydrates~~

To join to 437 or Drawing of 373.

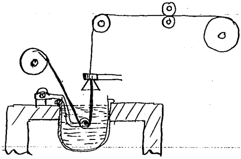
June 5 80

Safety device for a. c. lamps used in multiple arc





June 5th 1882



June 3 '82

Asphaltum dissolved in turpentine

Asphaltum mixed in proper proportion ~~to~~ with a drying oil such as Linseed to form a Japan —

Coat thin polished metallic plates with layer of very pure liquid ~~[illegible]~~ and bake in an oven for several hours until the Coating is very hard, The plate is then put in Nitric or other acid & ~~[illegible]~~ dissolved leaving ~~the~~ a very flexible dense film from which filaments of Carbon may be obtained by punching

~~of all high~~. The surface may be worked down smooth & a number of coats may be put on

Glass or mica plates dissolved by hydrofluoric acid & other material for plates & the dissolved by substance not attacking film.

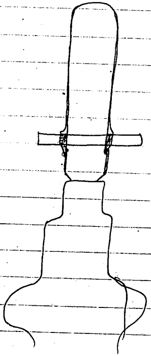
films or membrane of Oxidized mixed with asphalt

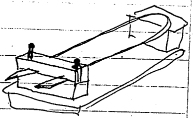
Linseed oil ~~mixed~~ o with or the

~~without asphalt, or asphalt~~

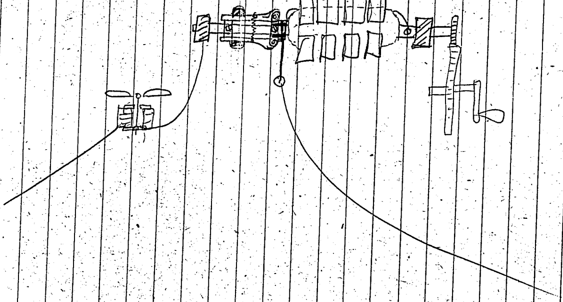
~~alone~~

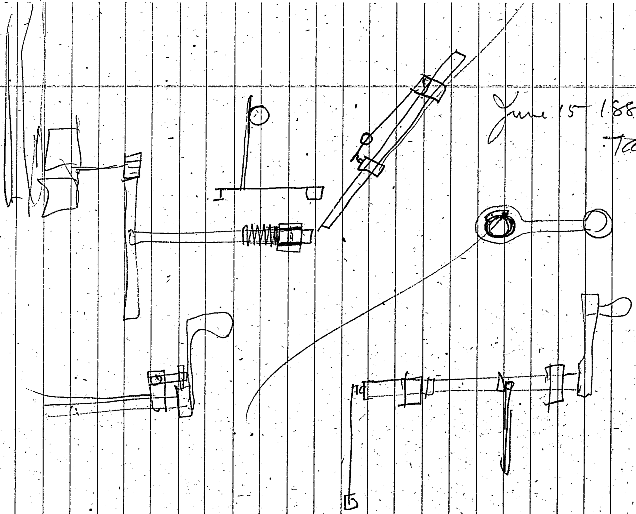
7 572



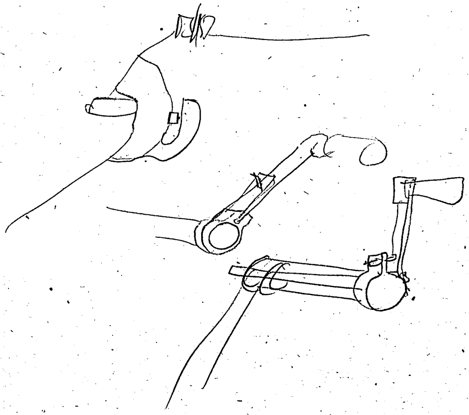


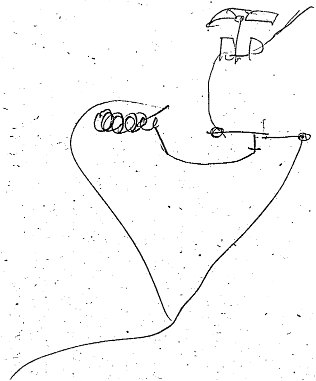
June 15 '92





June 15 1882
T.A.E.



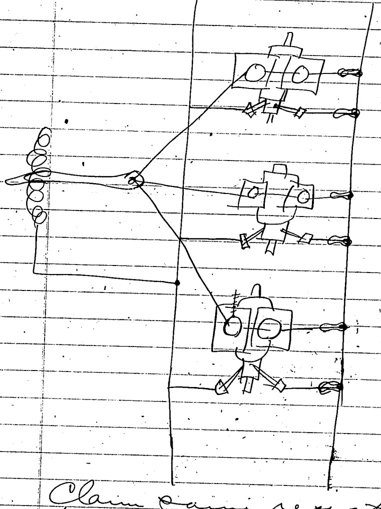


Central Station case.

(Put in next isolated regulation case, two or more machines with common automatic regulator + claim same source of control.)

Make patent on

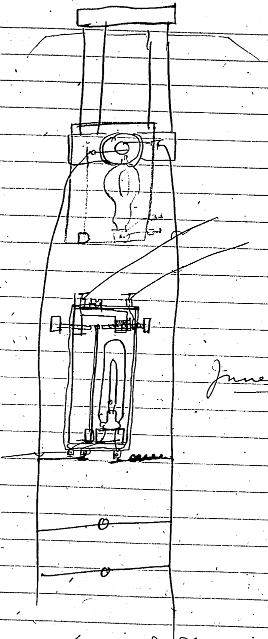
method of disconnecting dynamo or magneto electric machines arranged in multiple arc, consisting in first breaking the circuit of the bobbin



June 19.80,

Witness
R.N. Dyer

Claim same resistance for two or more multiple arc fields.



June 19 82

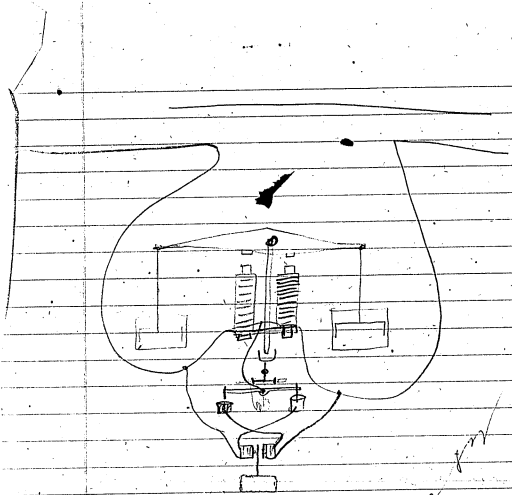
Heat may be used to work all kinds of expansion apparatus such as air or gas or other working on a diaphragm or on mercury pump, or direct expansion of ~~mercury in a tube~~.

Mention reflector to throw heat on spring. Spring may be coiled spiral around lamp. Lamp brought to side could be immersed in mercury bulb. Float to close circuits

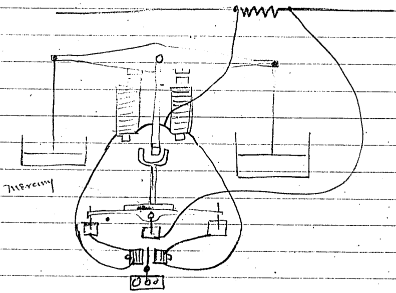
Placing in Camp permanently a company for a month, administering vapor Sulphur, Phosphorus and [illegible], Chloride of Calcium, & any other Drying agent - proof - Phos any.

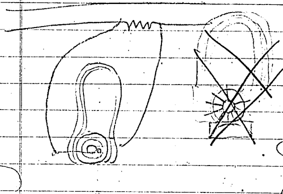
Placed in Camp, or ~~or~~ in tube, or in tube left in Camp long time & then sealed off! Prof. Kept in permanently.

June 19 82

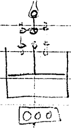


June 7 77

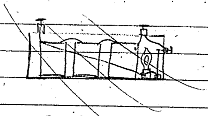




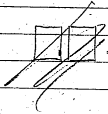
June 8/

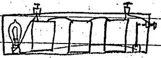


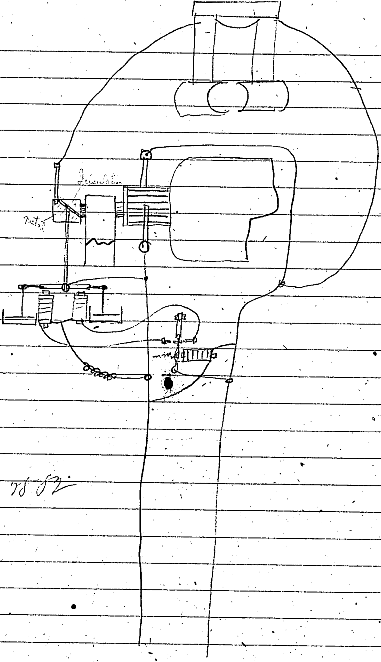
A.10



[illegible]






Insulation
Nuts

June 18 82

Minimum amount of water

Flour paste or dough well kneaded

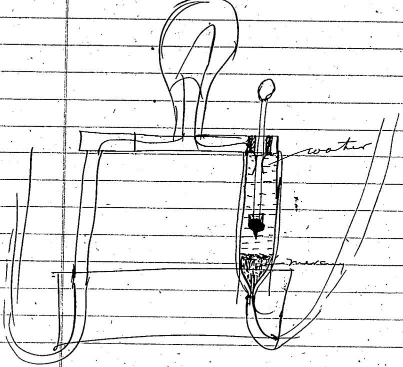
[illegible]

in sheets filaments are punched therefrom which are carbonized under [illegible]

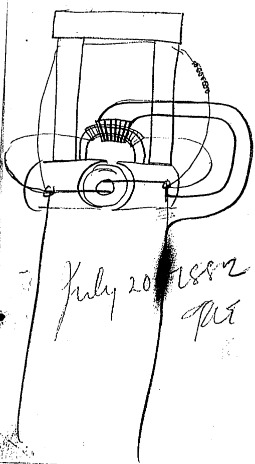
Also the dough is forced [illegible] from a chamber through an orifice in the shape of filament [illegible] 4 [illegible] in length & extra pieces put on the ends. Then dried under strain & pressure & then ~~[illegible]~~ in any desired shape then carbonized under strain & pressure.

June 27th 80

More or less or all of the starch
may be forced out & the
glutin used. Describe
glutin broadly

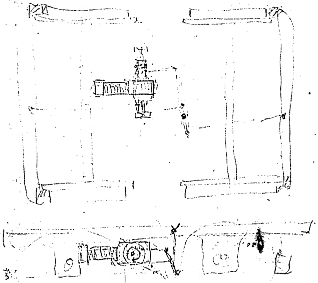

water
mercury

Mining lamp
with one movable connection.
July 7 82
R. N. Dyer



July 20 1882

TAE



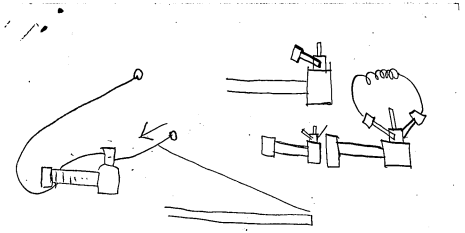
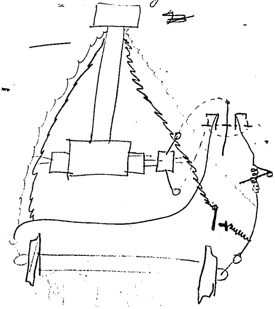
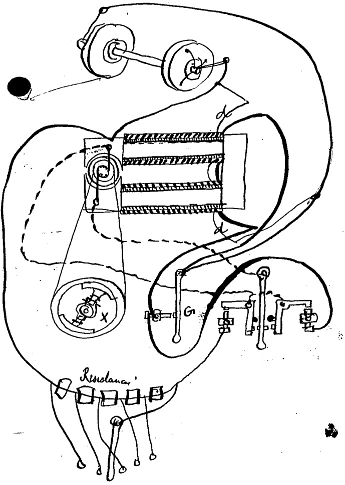


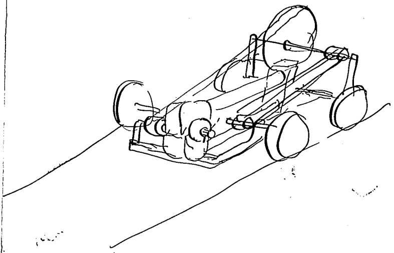
Fig 2

~~4~~

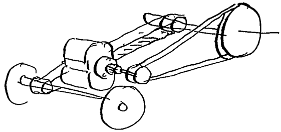



d
d
G
X
Resistances

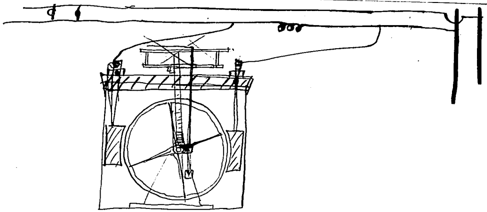
Can't make it work.



Mott make a drawing from the Photograph
of the Locomotive for a patent
Insull has a photograph – show Belts clearly

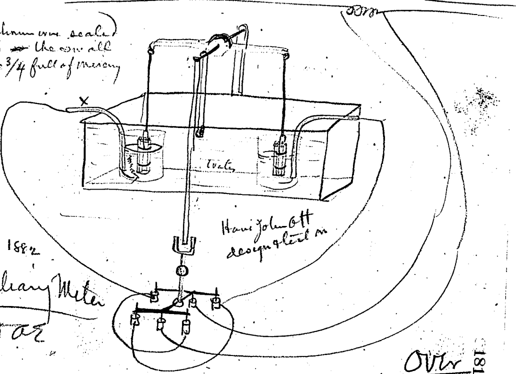


— August 1882 —



Aug 2 1882

X is platinum wire sealed in glass the cups all jars are 3/4 full of mercury


X
mercury
water

Have John Ott design & test m

Aug 13 1882

Capillary Meter

TAE

Over 181

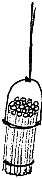

bundle of glass tube

fig 2

Large square trough filled with coal oil

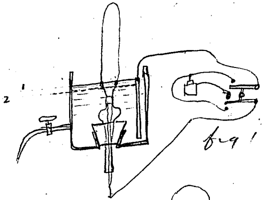


fig 1

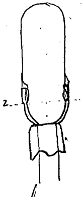


fig 2

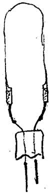
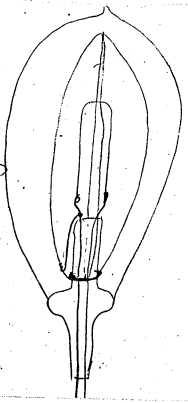


fig 3

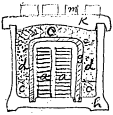
Aug. 18 82



Aug 18th 1882

object to exclude ~~Oxygen~~ air
& Carbonize under a pressure.
Carbonized Cotton sensitive to
oxidation absorbs Oxygen

plumbago Covers are the regular
plumbago Crucibles made with clay



Aug 18th
1882

Mould for Carbonizing

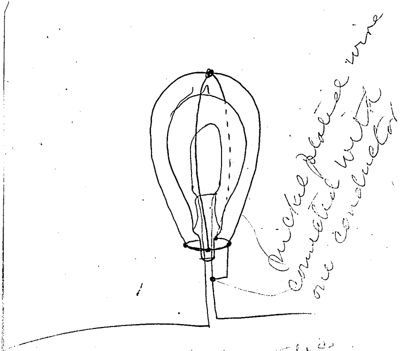
a a Carbon forms holding the fibres.

c c c Carbonized Cotton,

d d. plumbago tamped

g inside plumbago Cover.

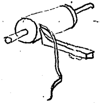
h outside plumbago
Cover K plumbago top.
m fire Brick to weight Cover down

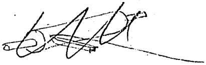

Nickle platina wire
connected with
one conductor

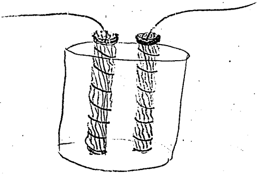
metallizes static
attraction of particles

Aug 18th 1882

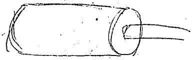
Oxide formed is in interstices so can't fall and large surface exposed to [illegible]

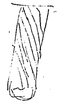


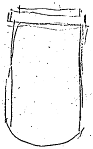


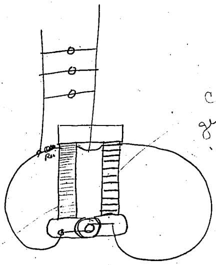


Aug. 18 / 82







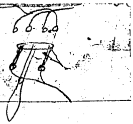


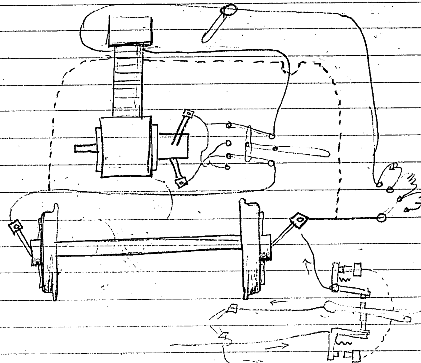
Current get stronger

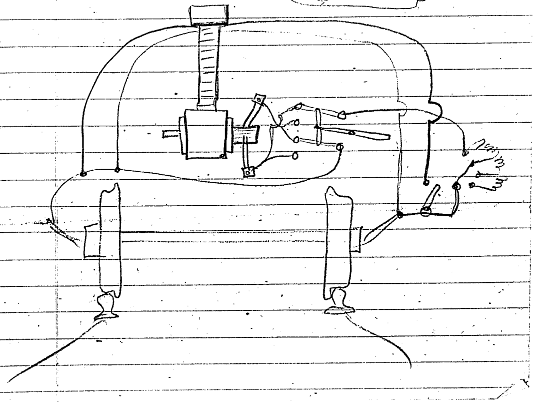
fine gets weaker on adding lamps

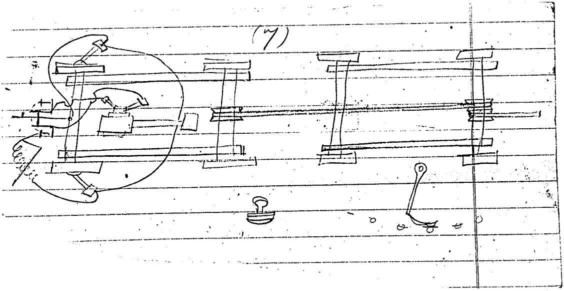
Aug 19, 82

Case 448
application filed Aug 7/82

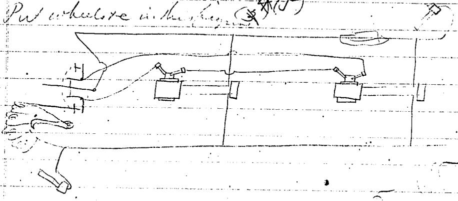




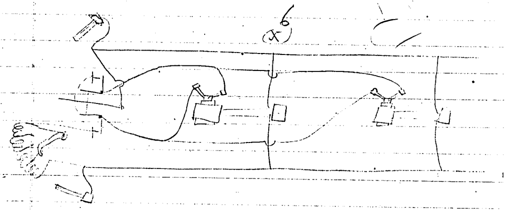



(7)

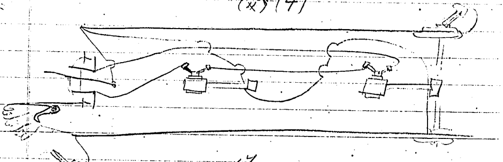
Put wheelbase in the key (~~3~~) #(5)



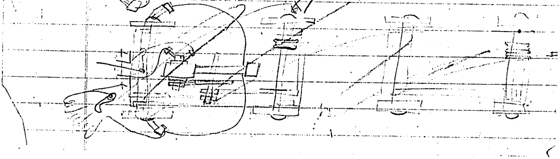
(x) 6



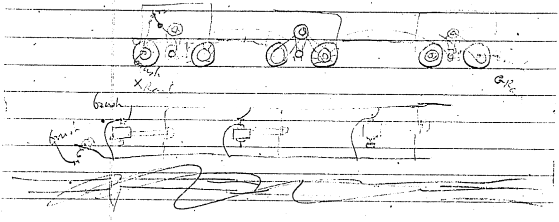
(x) #(4)



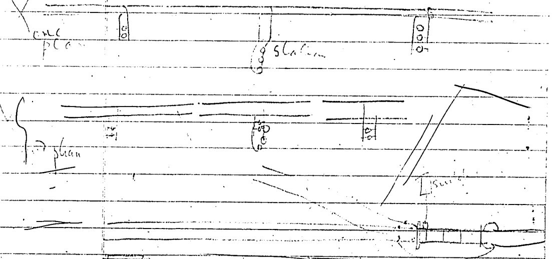
#7

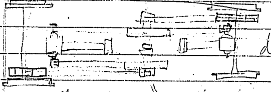


Dynamos in Series.


brush
X Rail
G R
brush
brush

dip the rail except top in a japan
+ bake on -

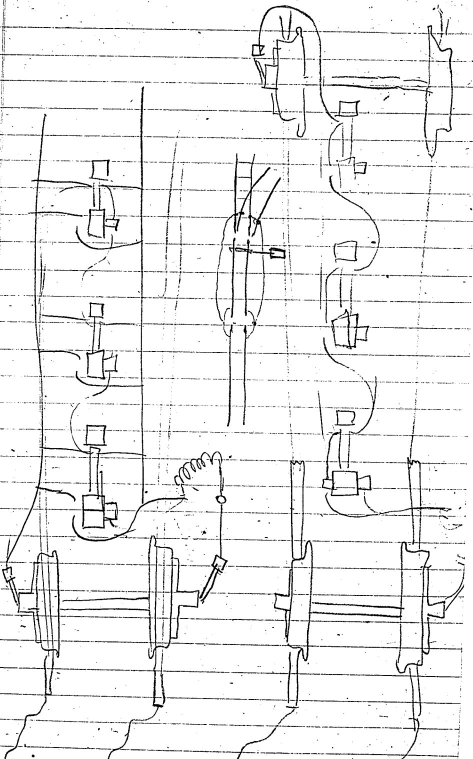

end plan
Station
plan
Switch



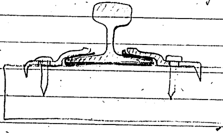
double Dynamo,

Ties dipped in boiling mixture
Compound of linseed oil + asphalt
(or not) mixed with white sand,

Nickelplate the Ends of the rails
ditto the fish plates, in addition a nickel plated
copper strip may or may not be used—

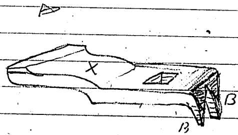


Whole rail except top of japanned by baking process X japanned, Cloth under rail & overlapping so X is on it this is also japanned & baked



Spikes are japanned. The asphalt may be left out of the japan & the drying oil ~~[illegible] be~~ boiled to thick consistency used alone & baked.

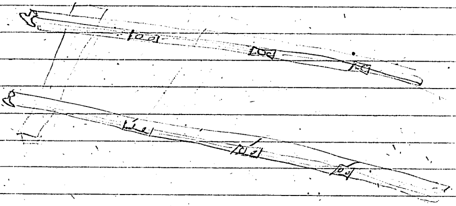
Application for patent filed Aug 14/82 Case 510

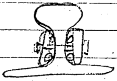


The prongs B are to prevent the spike from wedging X too tightly against the cloth on the rail & thus cutting it It also prevents X from turning.

Case No #67

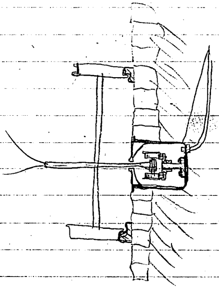
application for patent filed Aug 14/82

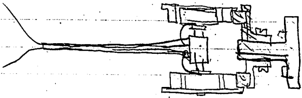
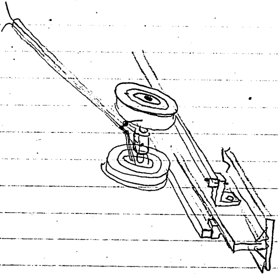




Case 468

application filed Aug 14/87



Case 468
application filed Aug 14/82